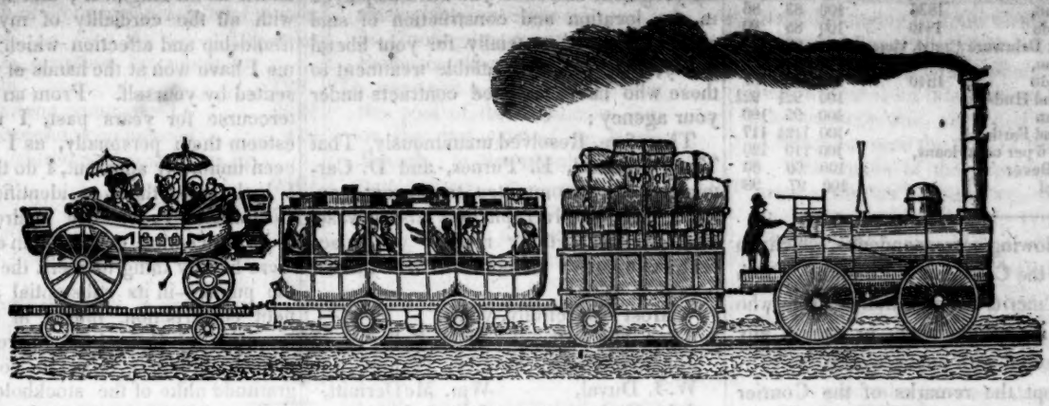

AMERICAN RAILROAD JOURNAL,
AND ADVOCATE OF INTERNAL IMPROVEMENTS.

PUBLISHED WEEKLY, AT NO. 132 NASSAU STREET, NEW-YORK, AT FIVE DOLLARS PER ANNUM, PAYABLE IN ADVANCE.

D. K MINOR, and GEORGE C. SCHAEFFER, } EDITORS AND PRORIETORS.] SATURDAY, MARCH 18, 1837. [VOLUME VI.—No 11.

CONTENTS:

AMERICAN RAILROAD JOURNAL.

NEW-YORK, MARCH 18, 1837.

LIST OF SUBSCRIBERS to the **Railroad Journal**, that have paid, (continued.)

J. L. Smith,	City	Jan. 1, 1838
J. Matthiew,	"	Jan. 1, 1838
Astor House,	"	July 1, 1837
G. W. Bruen,	"	Ju y 1, 1837
W. Taylor,	"	in full
J. Ely,	"	Jan. 1, 1838
J. W. Crane,	Binghampton, N. Y.	Jan. 1, 1838
New Castle Manufacturing Co.,	New Castle, Del.,	Jan. 1, 1838
A. McGrew,	Cincinnatti, Ohio,	Jan. 1, 1837
S. Williams,	Florence, Ala.,	Jan. 1, 1838
Richard Ellis,	Richmond, Va.,	Oct. 1, 1837

☞ It will not do, these hard times for money, to be too modest. The *Paper Maker* must be paid, the *Engraver*, the *Ink Maker*, and the *Printer* must be paid,—then why not Pay the Publishers and the Editors the *current year* and all *arrearages* for the Journal? *It must be done.*—PLEASE REMIT BY MAIL.

TRANSACTIONS OF THE INSTITUTION OF CIVIL ENGINEERS OF GREAT BRITAIN.

The first volume of this valuable work, has just made its appearance in this country. A few copies, say *twenty-five* or *thirty* only, have been sent out, and those have nearly or quite all been disposed of at *ten dollars* each—a price, although *not* the *value* of the work, yet one, which will prevent many of our young Engineers from possessing it. In order therefore, to place it within their reach, and at a convenient price, we shall *reprint* the entire work, with all its engravings, *neatly done* on wood, and issue in six *parts* or *numbers*, of about 48 pages each, which can be sent to any part of the United States by mail, as issued, or put up in a volume at the close.

The price will be to subscribors *three dollars*, or *five dollars* for two copies—*always in advance.* The first number will be ready for delivery early in April—Subscriptions are solicited.

☞ MISSING NUMBERS WANTED.—If any of our subscribers have numbers 4, 5, 6 and 7, of Volume or *five last* year, which they do not desire to preserve, they will confer a special favor by sending them to us, that we may complete a few copies of the volume.

*** If any of our subscribers are in want of *any other* number of the same volume to complete their volume they will please give early notice and they shall be sent.

The Title page and Index for last year, or volume five, will be forwarded to subscribers with our next number.

RAILROAD AND CANAL STOCKS, in New-York and Philadelphia.

SALES OF STOCK IN NEW-YORK

March, 14th.

Mohawk Railroad	cash	79
Paterson Railroad	"	65
Boston and Providence	"	102½
New-Jersey Trans	"	100
Stonington	"	69
Worcester Railroad	"	91
Long Island Railroad	"	74
Paterson Railroad	"	65
Stonington Railroad	"	69
Harlaem Railroad		66
Utica and Schenectady	cash	118½
Delaware and Hudson Canal	"	90
Morris Canal	"	95
New Orleans Canal	"	95

PHILADELPHIA STOCK MARKET.

March 10th.

	Price of shares	Offered	Asked
RAILROAD STOCKS			
New-Castle and Frenchtown	25	31¼	32
Do loan, 5½ per cent	100	99	101
Wilmington and Susquehanna	50	38	42
Camden and Amboy, shares,	100	135½	136½
Do loan, 6's 1836	100	110	120
Danville and P shares	50	25	35
Norristown, do	50	34	34½
Do 6 per cent loan	100	85	100
Valley Railroad	7½	1	3
Westchester do	50	20	28
Minehill do	50	59	57
N. L. and Penn. Tp. do	40	34½	35
Philadelphia and Trenton do	100	125	127
West Philadelphia Railroad	50	20	30
Harrisburg and Lancaster	50	46	48
Cumberland	25	15	20
Beaver and Meadow	50	57	57½
MISCELLANEOUS STOCKS			
North American Coal Company	25	12	14
Steam Bt. Sts. Columbian	100	18	22
Exchange Stock	100	70	80
Arcade	100	55	75
Theatres—Chestnut street	600	625	675
———Walnut street	280	175	220
———Arch street	300	325	375
Gas Company	100	100	102
CANAL STOCKS.			
Schuylkill Navigation, shares	50	163½	164½
Do loans, 5 1845	100	98	100
Do do 1855	100	100	101
Do do 5½ 1837	100	98	100
Lehigh Coal and Navigation	50	86	87
Do loan, 6 1838	100	97	98
Do do 6 1839	100	97	98
Do do 6 1844	100	99	100
Do do 5 1840	100	96	97½

Union Canal, shares		200	180	190
Do loan,	1836	100	83	86
Do do	1840	100	85	90
Chesap'k & Delaware Canal, shares		200	30	40
Do loan,	1837	100	60	67
Do do	1840	100	60	67
Delaware and Hudson,		100	92¼	92¼
Do loan		100	95	100
Louisville and Portland		100	112½	117
Convertible 6 per cent. loans,		100	110	120
Sandy and Bever		100	60	80
Morris Canal		100	97	98

The following correspondence, which we copy from the Courier and Enquirer of 25th February, merits the attention of those who have the superintendance, or are in any way connected with public works.

We adopt the remarks of the Courier and Enquirer as expressing our own sentiments in relation to the character, and course of the gentleman, and the subject which called forth this correspondence.

☞ In giving place to the following correspondence between Major McNeil and the contractors who under him constructed the Boston and Providence Railroad—a work which probably has no rival in all that pertains to its durability—we deem it unnecessary to say ought in regard to the merits of Major McNeil as an engineer. His reputation is too well established in the estimation of the public to require any such testimony from us; but we deem it a duty alike to him and to contractors generally, to call public attention to the fact elicited by this correspondence, that the engineer considered himself not only the representative and agent of the Company, but so far the guardian of the interests of the contractors, as to feel it is his duty to make them a liberal allowance for obstructions in excavations which no ordinary foresight and prudence on their part, could enable them to anticipate. Thus, where contracts are taken in good faith, and it was subsequently discovered that unanticipated obstructions occurred which would render their contracts exceedingly onerous, the Engineer allowed them, under the sanction of a very liberal board of direction, such additional compensation as justice and liberality dictated, without reference to the mere letter of their contracts.

Such conduct merited a proper expression of feeling on the part of the Contractors, while the constant aim of the Chief Engineer to add character to the business, entitles him to their respect and esteem.—We hope the lesson inculcated by this correspondence, will not be lost upon other Engineers, and the board of Directors under whom they act.—[Ed. Cour. & Enqr.]

To Major Wm. Gibbs McNeill—

Sir,—At a meeting, holden at the Astor House, in the city of New-York, on Wednesday, Sept. 28th, 1836, Thomas Hassard, Esq., being called to the Chair, and Jonathan Crane appointed Secretary, it was voted unanimously, that

Whereas, the undersigned, having been Contractors and Agents on the Boston and Providence Railroad, of which you, sir, were the Chief Engineer and Agent, feel it a duty to make an expression of their high consideration and respect, not merely for the judgment and skill you have displayed in the location and construction of said road, but more especially for your liberal policy, your kind and affable treatment to those who have executed contracts under your agency:

Therefore, Resolved unanimously, That Thos. Hassard, E. Turner, and D. Carmichael, be a committee to present you, sir, a pair of silver pitchers and a vase, which we respectfully request you to accept, as a small memento of our mutual regard.

Most respectfully, yours,

Thos. Hassard,	Thos. Bell,
Jonathan Crane,	Levi Walton,
W. J. Duval,	Wm. McDermitt,
John Borland,	Joseph Sturgess,
William Otis,	E. Turner,
Stephen Otis,	E. D. Turner,
Aaron Carso,	A. C. Vedder,
R. G. Fairbanks,	J. P. Vedder,
Daniel Carmichael,	Michael Onil,
Wm. S. Otis,	Joseph Mankin,
James Muranus,	Janus Mankin,
Daniel B. Carson,	John Moss,
Wm. A. Bird,	Alex'r. Birnie,
John T. Clarke,	John L. Bevens,
Ira Doder,	K. Beckwith,
Jacob Stearn,	N. D. Williams,
	——— Riley.

—

To Major Wm. Gibbs McNeill—

Sir,—The Contractors who have been engaged on the Boston and Providence Railroad, lately finished, under your superintendence, desirous of attesting their appreciation of your character and conduct, have appointed Messrs. E. Turner, D. Carmichael, and myself, a committee to procure and present to you, the accompanying pieces of plate.

In the unavoidable absence of my colleagues, the performance of this pleasing duty devolves upon me. Having been for a longer period than any of my associates connected with works of which you were the Chief Engineer, it gives me peculiar pleasure that I am selected to present you this evidence, that the kindness, courtesy and candor which has always marked your conduct towards us, has been duly appreciated.

In behalf of my associates, as such evidence, I ask your acceptance of a Silver Vase and a pair of Pitchers, herewith presented.

With great respect,
Your obedient servant,
Thos. Hassard.

New-York, January 1, 1837.

—

To Mr. Thomas Hassard—

Sir,—I beg to return to the Contractors of the Boston and Providence Railroad, represented by the Committee of which you are the Chairman, my most sincere thanks, not only for the splended plate which they have done me the honor to present to me, but for the warm expessions of their personal regards which, in their names, you have so kindly tendered me.

Such an evidence of their good feeling towards me is indeed amongst the most gratifying rewards, which have attended my efforts as an Engineer; and I reciprocate, with all the cordiality of my heart, the friendship and affection which you assure me I have won at the hands of those represented by yourself. From an intimate interccurse for years past, I respect and esteem them personally, as I trust, it has been uniformly apparent, I do their *calling*. I look upon them as identified with the Boston and Providence Railroad; and if, in its conception, general plan and location, there be any thing to merit the approval of the public—in its substantial and permanent construction, *indeed in the faithful execution of their trust*, there is, in my opinion, infinitely more to command the gratitude alike of the stockholders and the engineer.

That intelligent, upright and experienced Contractors should be preferred, and while they maintain, (as those of the Boston and Providence Railroad have done, without, I believe, one single exception,) the deserved character of being such, should be sustained and enccuraged by the Engineer, is too obviously proper to admit of question.—For I regard them as fellow laborers in a common cause, and agents, in fact, with him, of the Corporation; and when their best energies shall, to his knowledge, have been given to the promotion of the interests of their employers, surely a just appreciation of the labors of the contractor—a consideration of circumstances, concealed from the eye of man, and unanticipated, till disclosed by those labors, but which nevertheless, if overlooked, would deprive him of an adequate return, if not involve him and those dependent on him *in ruin*—surely, I say, such a course, on the part of the engineer, cannot be at variance with the true interests committed to him. That it has been my honest purpose, throughout, vigilantly to guard those interests, I am conscious is accorded. That I have done so, and that, at the same time, I know—while in the satisfactory fulfilment of your contracts, there is abundant evidence of that ability on your part, to be useful, which must ensure you ample employment hereafter—you have lost neither in fame, nor fortune under me, is a satisfaction even greater than the approving voice, which so flatteringly has reached me, from those with whom I have now for years been associated, on the Boston and Providence Railroad.

To the steadfast support which I have received throughout the progress of that work, however, in the liberal and enlightened policy of its Direction, you will agree with me, that *our united thanks are due.*

In conclusion, allow me to bear my public testimony not only to the skill and industry with which you and your associates have, one and all, executed your contracts, but also to the cheerfulness and perseverance which have distinguished your efforts; and with my best wishes for your future welfare and happiness, believe me

Your friend, and obedient servant,
Wm. Gibbs McNeill.

INTERNAL IMPROVEMENT IN PENNSYLVANIA.

The whole length of canal by the Com-

monwealth of Pennsylvania, in operation at this time is	100 miles
Railroad in operation belonging to the State	120
Canal extension commenced	209½
Railway extension commenced	41½
Canal by incorporated companies in operation	286½
Railroad by incorporated companies in operation	186
Canal by companies being constructed	386½
Whole length of canal in operation in the State	886½
Whole length of Railway in operation	306
Aggregate of Canal and Railway in operation	1192½
Whole length of Canal being constructed in the State	305½
Whole length of Railway being constructed	400½
Aggregate of Canal and Railway being constructed	715½
Aggregate length of Canal in the State when completed	1191½
Aggregate length of Road when completed	715¾
	1,907¼

From the Harrisburg Reporter.

THE IMPROVEMENT BILL

Was reported in the House of Representatives yesterday, by Mr. J. M'Ilvaine, chairman of the Committee on Internal Improvement. We have neither time nor room, at present, to do more than give the following brief abstract of its details:

To the Erie extension,	$600,000
To the North Branch extension,	600,000
To an extension from the mouth of Tangascootack to the Sinnemahoning,	100,000
From a navigable feeder from Alleghany to the Kiskeminetas, near Kittanning,	100,000
To complete the railroad to avoid the inclined plane at Columbia,	87,500
To complete the Tangascootack line on the West Branch,	38,943
To the Gettysburg railroad,	150,000
For reservoirs in the neighborhood of Johnstown and Hollidaysburg,	25,000
For a survey to ascertain the practicability of a continued water communication between the West Branch and the Allegnany river,	10,000
For surveys to ascertain the practicability of a railroad from Chambersburg to Laughlinstown,	12,000
For the survey of a railroad line from Nanticoke Pool, by way of Tunkhannock, to Binghampton,	15,000
For the survey of a railroad from Franklin to the harbor of Erie,	2,000
For surveys to ascertain the practicability of conneeting the canals on the Juniata and Conemaugh, by a railroad without inclined planes, (no sum specified,)	
For making a navigable communication between Sheaver's creek, in Huntingdon county, and the Pennsylvania canal.	5,000
To construct a towing path along the pool of the Nanticoke dam on the east side of the North Branch, to the mouth of Salmon's creek,	5,000
To extend the Pennsylvania railroad to Marietta, so as to avoid the inclined plane at Columbia,	40,000

In addition to the foregoing, the bill provides for the following subscriptions of stock on behalf of the Commonwealth:

To the Danville and Pottsville railroad,	$300,000
To the Bald Eagle and Spring creek navigation,	95,000
To the Lancaster, Mount Joy, Portsmouth and Harrisburg railroad,	150,000
To the Cumberland Valley railroad,	200,000
To the Union Canal company,	3000 shares
To the Monongahela navigation company,	100,000
To the Franklin railroad,	50,000
To the Freeport and New-Castle railroad,	100,000
To the Pittsburg and Laughlinstown railroad,	200,000
To the Somerset and Johnstown turnpike company,	8,000
To the Williamsport and Washington turnpike,	5,000
To the Monongahela Bridge at Williamsport,	5,000
To the Warren and Franklin turnpike company,	5,000
To the Washington and Pittsburg turnpike company,	10,000
To the Peter's Mountain turnpike company,	35,000
To the Mercer and Meadville turnpike company,	500
To the Downingtown, Ephrata, and Harrisburg turnpike,	6,000
To the Susquehanna and Waterford turnpike,	1,000
To the Bald Eagle and Brush Valley turnpike company.	1,000

BOARD OF ASSISTANT ALDERMEN, JANUARY 9TH. 1837.

COMMUNICATION FROM THE WATER COMMISSIONERS, SETTING FORTH THE PROGRESS OF THE WORKS FOR SUPPLYING THE CITY WITH PURE AND WHOLESOME WATER. LAID ON THE TABLE AND ORDERED TO BE PRINTED.

JOHN NEWHOUSE, Clerk.

To the Honorable the Common Council of the City of New-York.

The Water Commissioners had the honor of presenting a communication to the Common Council on the 1st day of August last, stating briefly the progress and situation of the works for supplying this city with pure and wholesome water, up to and including that date; and they now beg leave to lay before your honorable body the material facts in the progress of the work from that date to the first day of January, 1837.

It was stated in the communication referred to, that Commissioners of appraisement had been appointed by the Vice-Chancellor to take certain lands for the Croton Aqueduct, belonging to John Grffin, James Palmer, Zophar Palmer, and Joshua Purdy. One of the persons appointed, however, was absent from this State at the time, and the vacancy was not filled by the Vice-Chancellor until the 26th of July, 1836.

The names of the gentlemen then, and now, acting as Commissioners of Appraisement, are as follows, viz: William Jay, of Bedford, Abraham Miller, of Northcastle, and William Nelson, of Peekskill, all in the county of Westchester. They were notified to meet on the second of August, 1836, at the village of Sing Sing, for the purpose of appraising the amount of compensation to be paid the persons above named, as owners of the property, required by the Water Commissioners.

The appraisers accordingly met at the house of S. M. Tompkins, in the village of Sing Sing, at 12 o'clock, M. on the 2d day of August, aforesaid, and completed their estimate and appraisal on the 3d of August, which was handed to Daniel B. Talmadge, Esq., the Solicitor of the Water Commissioners, to be reported forthwith to the Chancellor for confirmation.

This appraisal was duly confirmed by the Chancellor on the 8th of August and was as follows:

For Land of			
James Palmer,	$5\frac{853}{1000}$	of acres,	$700 00
Zophar Palmer,	$\frac{768}{1000}$	"	45 00
Joshua Purdy,	$4\frac{251}{1000}$	"	500 00
John Griffin's West lot,	$11\frac{770}{1000}$	" $425	
John Griffin's East lot,	$14\frac{184}{1000}$	" 1425	1850 00
		"	
Total of acres,	$37\frac{531}{1000}$	" Total,	$3095 00

The reasons why so small a portion of the land required for the Aqueduct, was placed under Commissioners of Appraisement in the first instance, was, because the map of these lots were among the first furnished us by the Engineers, and the owners of the land were the first who positively refused to sell or negociate with us for its purchase.

It may be proper to state in this place, the difficulties the Commissioners have to encounter in obtaining the land required for the works. In a former paper we alluded to the opposition attempted by a portion of the inhabitants of Westchester; their unreasonable demands, as indicated by resolutions passed at public meetings, and their remonstrances to the Legislature. The prejudices produced in the minds of many by these proceedings, tends very much to embarass the operations of the Commissioners in their endeavors to obtain possession of the necessary land on fair and equitable terms, and without possession, either by purchase or through the appraisers, we are not authorised to use or disturb its soil in the prosecution of the work.

We are bound by the statute, first, to agree with the owner of any property which may be required for the purpose, as to the amount of compensation to be paid such owner; and it is only in the event of disagreement between the Commissioners and the owner, except in the case of infants,

married women, insane persons and absentees, that we are authorised to apply to the Chancellor for the appointment of Commissioners to examine the property and estimate the value thereof. The Chancellor before appointing Commissioners, requires an affidavit from the Water Commissioners, that an attempt has been made to agree with the owner of the property, and that they were unable to agree. There are on the line of Aqueduct and Croton reservoir about 200 owners. First, it is necessary to ascertain the name and residence of these respective owners, and that done, each resident must be seen in person. Some of them are not at home when called on; others are a mile or two away from their residence; and many who are seen, want time to make up their minds as to the amount of compensation they ought to receive; and another, and in some instances, two or three calls must be made before the matter can be closed. This, to be effected on a line of thirty odd miles, is not very easily accomplished.

Having failed to purchase by agreement, and application having been made to the Chancellor for Commissioners of Apprai ement, the application will not be granted which every owner is notified, in due form, of the fact, in order that he may appear in person, or by Counsel, and oppose the application if he deems proper. The Chancellor having appointed the Commissioners, each owner of land to be taken, must again be served with a notice of the time and place of meeting, in order that they may appear and produce evidence of the value of their property, and the damage they will sustain by its occupation for the Water Works. This having been got through with, and the report of the Commissioners duly laid before the Chancellor, some distant day is appointed for hearing objections why the report should not be confirmed. After confirmation, searches are to be made, in order to ascertain the validity of title to each piece of land, be it more or less; and the objections or others, not coming forward before the expiration of sixty days to claim the amount awarded them, it becomes necessary that a tender of money should be made them personally, and on refusal to receive it, to pay it into Court. There is an additional embarassment which has grown up since the line of the Aqueduct was marked out. Whether it has emanated from the mania for speculating in lots, or from a disposition to enhance the value of the land, the Commissioners have no positive means of deciding; but, the fact is, that since the period alluded to, we find the line of the Aqueduct crossing village lots in several places, where we formerly only met with fields appropriated to the plough or for pasture. Instead of one owner, therefore, as we have originally supposed, we find several;—the map of the line of Aqueduct must be made to conform to this new arrangement, and when the subject is brought before the Appraisers, there is no lack of evidence to prove, that as much has been offered for one of these new village lots, and that it is worth as much, or more, than would have been given for several acres of the ground a short time previous. These embarassments, thus thrown in the way of our proceedings, may account, in a measure at least, for the delays which have occurred in the progress of this portion of the work.

None of the persons included in the first appraisement, called for the amount awarded them by the Commissioners before the expiration of the sixty days from confirmation, and we accordingly dispatched P. S. Cooke, Esq., with the amount in specie, to make the tender; two of them refused the tender, and the amount of their awards was paid into the Court of Chancery.

At themeeting of the Board of Water Commissioners on the 13th of August 1836, a a resolution was passed, directing D. B. Tallmadge, Esq, as solicitor of the Commissioners to apply to the Vice Chancellor for the appointment of Commissioners of Appraisement on such portions of the land, not already purchased, as is designated on the map of the Aqueduct from number 5 to 38, inclusive. This range extends from the land of Henry Louns berry, designated on Map number 4, which has been purchased by the Commissioners, to the State farm at Sing Sing.

An act was passed by the Legislature on the 11th of May, 1836, authorising the Water Commissioners, with the consent of the Governor, to construct the Aqueduct through the State farm appurtenent to the State prison at Sing Sing, and the consent of the Governor was officially obtained, for the purpose, on the 23d of September, 1836.

It was the middle of October before the Chancellor decided on the appointment of Appraisers, in the case referred to the Solitor by the Commissioners on the 13th of August last. He then appointed the same gentlemen who have served on the first case submitted, viz: Messrs. Jay, Nelson, and Miller. They were regularly notified to meet at Sing Sing on the 28th of October, and a Committee from the Commissioners repaired to that place for the purpose of furnishing such information on the subject before the Appraisers, as might be deemed necessary and proper. Two of the gentlemen appointed appraisers attended at the place and time designated by their notice; the third did not attend, his notice having taken a wrong direction. They adjourned to meet on the 3d of November, and measures were adopted to inform the absentee of the fact.

The Appraisers met aecordingly on the 3d of November, the whole Board being present. They spent three days in hearing evidence brought forward by the owners of the land to be taken, and on the evening of the last day, completed their report. There were twenty-eight owners of the land comprised in the report of the Appraisers; the quantity taken was 57 acres 465 thousandths and the aggregate award amounted to $27,140 12 cents. This report was handed to our Solicitor on the 7th of November, 1836, to be presented to the Chancellor for confirmation. On the 28th of November, the question of confirming the report came up before the Chancellor for consideration, and Counsel was heard in opposition, and in favor of eight of the awards, when further proceedings was adjourned to the 7th of December for a rehearsing. At the day appointed, the subject again came up, and judgment was given by the Chancellor, confirming the whole report, except six cases, which were referred back to the same Appraisers for re-examination.

The following persons have since received the amount awarded them, viz:

John Sing, for 286 thousandths of an acre,	$3,500 00
Willet Holmes, 51 thousandths of an acre,	450 00
Russell Barnam, for one thousandth of an acre,	350 00
John Hogg, for one acre 392 thousandths,	300 00
John Hoag, for one acre 392 thousandths,	300 00
Michael Lent, for 16 thousandths of an acre,	250 00
Robert Acker, for 57 thousandths of an acre,	125 00
Estate of Henry Waller, for 294 thousandth,	2500 00
Ldward Auser, 2 acres, and 213 thousandths,	2200 00
Total,	$9675 00

Nearly the whole of this land forms parts of village lots.

At a meeting of the Water Commissioners on the 18th of October last, it was resolved, to apply to the Chancellor for the appointment of Appraisers on all the land required for the Aqueduct, between the Croton and Harlæm river, which had not already been purchased or taken by appraisement. As yet, however, the Appraisers have not been appointed, neither have they met on the cases referred back to them for re-consideration.

In addition to these perplexing delays, (whether chargeable to the form of proceedings by the Court, or the neglect of applicants, the Commissioners are not competent judges,) they have had to contend with what they have considered much lack of energy in the operations of their Engineer department. We took occasion to state in our communication of the 1st of August, already alluded to, that on the 23d of July, 1836, certain information was requested of the Chief Engineer, which he had promised to furnish as soon as practicable; and that, on the production of which, we were still in hopes of being enable to place some part of the work under contract before the close of that year. These hopes, however, have not been realized, and the Commissioners having felt much dissatisfaction for this disappointment, and for other cause, they finally determined to make a change in the office of Chief Engineer, and he was accordingly notified of the fact. After proper inquiry on the subject, they fixed upon John B. Jarvis, Esq., as Civil Engineer, who had been engaged on most of the great works constructed by this State, and who was extensively known as an energetic and practical conductor of the public works. The negotiations with Mr. Jarvis have resulted favorably, he was appointed Chief Engineer of the works for supplying this city with water, on the 11th of October, 1836, at an annual salary of five thou-

sand dollars; and an official letter was transmitted to him by the Chairman, announcing the fact of his appointment. He arrived here on the 19th, and on the 20th two of the Commissions accompanied him to Sing Sing and Yonkers, where parties of the Engineer corps were engaged, and placed him in the direction of the Engineer department of the works. Mr. Jarvis has since inspected the whole line of the Aqueduct, from the Croton to the Harlæm river. His opinion of the route, so far as he was able to judge from viewing it, without instrumental examination, appears favorable, and the location of the dam at Garritson's Mills, he thinks the best, under the circumstances of the case, that could be obtained.

It was found that most of the stakes on the line had been removed; whether intentionally by persons inimical to the work, or by accident while ploughing the field, or reaping the crop, the Commissioners have not been able to ascertain. A party was accordingly formed for re-setting the stakes in a more permanent manner than heretofore.

The Commissioners feeling a strong desire to have some part of the work under contract at the opening of the next working season, requested the Chief Engineer to have shafts sunk at the site for the dam, and on the line of the Aqueduct from that place to Sing Sing, about 8 miles in length, in order to exhibit the soil and nature of the ground to be excavated, both for the information of the contractors as well as ourselves. These operations were nearly completed, when the cold became so intense as to prevent further progress until a change of weather.

Examinations have also been made of the ledges of rock on the line of Aqueduct, and near the site of the dam, to ascertain whether suitable stone, by quarrying, can be obtained in convenient situations for the works. The result has been as favorable as could be expected under the circumstances in which the examination was made, it having been prosecuted without assistants to open the ledges of rock examined, and during the inclement month of December last. There can scarcely be a doubt, however, that abundance of stone, which will compose a majority of the materials wanted for the work will be found on the line. Specimens of the stone discovered are deposited in the office of the Water Commissioners.

When Mr. Jarvis entered on the duty of conducting the engineering of the works, there were nineteen persons attached to the corps. He immediately set about diminishing their number, and there are now only five retained for service during the winter. Two of these are at the office at Sing Sing, engaged in preparing a map and profile of the several roads that intersect, or pass in the vcinity of the line of Aqueduct, in order that it may be seen at what place it will be necessary to obtain the privilege to pass over private property, in transporting to the work, the materials for constructing it; and three of the party are employed in the office of the Water Commissioners in this city, preparing the map and drawings, necessary to form the basis of the specifications of the aqueduct, culverts, bridges, &c.

In accordance with the 25th section of the act of the 2d of May, 1834, the Commissioners have regularly reported to the Comptroller, every six months, a detailed account of their receipts and disbursements, since their first operations under the ordinance of the Common Council, passed the 7th May, 1835, which directed them to proceed with the work.

The amounts disbursed for all matters connected with the works of supplying this city with water, are as follows:

From July 1835, to January 1836,	31,828 02
From January 1836, to July 1836,	12,070 84
From July 1836, to January 1837,	28,099 59
Total,	$71,998 45

For particulars, see our accounts rendered the Comptroller.

The following statement will show the whole quantity of land required for the Croton reservoir and the aqueduct, the quantity paid for, the quantity under agreement, and appraised but not paid for, and the quantity still to be acquired, either by purchase or through the intervention of appraisers.

	Acres Thous's.
The whole quantity of land required for the Croton Reservoir and Aquepuct, from the Croton to Harlaem river,	813 $\frac{147}{1000}$
The quantity of land purchased and paid for around the Croton Reservoir,	241 $\frac{443}{1000}$
The quantity taken by appraisement and paid for,	23 $\frac{300}{1000}$
The quantity purchased and paid for on the line of the Aqueduct, is	17 $\frac{215}{1000}$
The quantity taken by appraisement and paid for on the line of the Aqueduct, is	15 $\frac{201}{1000}$
The total quantity paid for, is	298 $\frac{559}{1000}$
The quantity under agreement but not paid for, is	4 $\frac{815}{1000}$
The quantity appraised but not paid for, is	53 $\frac{147}{1000}$
The quantity of the State farm, the use of which was authorised by the Governor,	2 $\frac{417}{1000}$
The quantity still to be obtained either by purchase or Appraisement is	454 $\frac{209}{1000}$
It thus appears, the quantity of land paid for, the title of which is vested in the Corporation of this city, is	298 $\frac{559}{1000}$
The quantity under contract but not paid for, is	57 $\frac{262}{1000}$
The quantity still to be acquired to Harlaem R., is	454 $\frac{209}{1000}$
And the quantity of the State farm, is	2 $\frac{417}{1000}$
Making the total as above	813 $\frac{147}{1000}$

The solicitude manifested by the members of your Honorable body, and by our fellow citizens generally, for the progress of this great work, cannot be greater than that experienced by the Commissioners. It is this which has led to the change in the Engineer department, and they have reason to think, the result will be favorable to a more energetic prosecution of the business, and that it now may be calculated with some degree of certainty, that at least a portion of the work will be placed under contract in the spring of the present year.

Before closing this communication, the Commissioners beg leave respectfully to remind your Honorable body, that there are two subjects, presented by them for consideration which are yet undecided on, if the Commissioners are correctly informed, both of which require Legislative aid, and are considered important. One, on the subject of certain highways and turnpike roads, that will be covered with water by the damming of the Croton river; and the other, respecting the sites for the necessary reservoirs on the Island of New-York. Until the first is disposed of, we are prevented from building the Croton dam, as the roads alluded to, must be constructed before the reservoir is formed; and all operations on the Island of New-York must be suspended, until the Legislature shall authorise an alteration of the city map, in order that the reservoirs may be permanently located.

There is another subject, which the Commissioners refer to with great reluctance. It has appeared by the proceedings of one of your Honorable boards, as published in the newspapers some time since, that censure has been cast upon the Commissioners for some unknown cause, and that in debate, it had been stated, they were under no accountability, either to the public or to the Common Council, and that a resolution had been proposed to apply to the Legislature for an act compelling them to make quarterly reports to the Common Council. There seems to be some mistake in this matter however, as the fact is, the Commissioners consider themselves accountable both to the public as well as to the Common Council. To the public they are accountable for an honest and upright discharge of their duty, and to the Commn Council they are accountable for a vigilant superintendance over those employed under them, and for the strictest economy in the expenditure of the funds placed in their hands In order that your Honorable body might see that these funds were properly disbursed, the Commissioners have uniforly, as has before been observed, reported to the Comptroller a detailed account of their receipts and expenditures, at the end of every six months, since the commencement of their operations. These reports are made in conformity with the 25th section of the act of the 2d of May, 1834, to enable the Comptroller and finance Committee of the Board of Aldermen, to examine whether any improper expenditure had been incurred. The Commissioners have, in addition, always left their books open to the inspection of any member of the Common Council who might choose to examine them, and they have uniformly expressed to the

Comptroller, a readiness to appear before the finance, or any other Committee of your Honorable body, and produce their vouchers for the expenditures incurred. Feither ar they sensible of having at any time refused information to the Common Council, or any of its members or Committees, or neglected to report on any subject referred to them; and why your Honorable body should be led to doubt, that an ordinance or resolution directing the Commissioners to report quarterly to the Common Council, instead of half-yearly to the Comptroller, would not be complied with, and therfore, that it was necessary to ask an act of the Legislature for that purpose, is beyond their comprehension. The Commissioners will dismiss this subject however, with the hope, that nothing may occur, in the transactions of this important concern, to mar the good understanding which ought, and which they still believe does exist, between them and your Honorable body.

All which is respectfully submitted.

STEPHEN ALLEN,
CHARLES DUSENBURY,
WILLIAM W. FOX,
SAUL ALLEY,
BENJAMIN M. BROWN,
} *Water Commissioners.*

Office of the Water Commiseioner's, New-York, January 9th, 1837.

THE RIVER THAMES.—The removal of the old London Bridge has caused a considerable change in the river above, and also, though in a less degree, below the bridge. Owing to the contracted arches through which the water had to make its way at the old bridge, there was a fall of from 4 feet 9 inches to 5 feet at low water; this fall is now reduced to about 2 inches; so that the low water line above the bridge is nearly 5 feet lower at spring tides than formerly. In consequence, a greater increased body of tidal water now flows up and down the river. The effect of this is to scour and deepen the channel of the river; its influence in this respect being sensibly felt as far up as Putnam Bridge, 7½ miles above London Bridge. The shores above the latter, that were formerly foul and muddy, are now becoming clean shingle and gravel, and near low water the beach is quite hard and firm. The shoals are also decreasing below the bridge; and there can be little doubt that the change will, at no distant period, be felt from the Nore up to Teddington. The descent down the river has been equally facilitated; the mean velocities of the flood and ebb between London and Westwinster-bridge are, flood three miles an hour, extreme three-and-a-half; ebb three ½; extreme three ½.—[Herald.]

From the Gettysburgh Star and Banner.

THE FRANKLIN RAILROAD.

☞ We have seen the report of THOMAS CHAMBERS, President of the Franklin Railroad Company. It is an extraordinary document, written in a spirit, not only of low rivalry, but altogether destitute of truth. It ill becomes *gentlemen*, striving for the improvement of the State, to travel out of their way to assail *any* work which they may suppose likely to be their competitor. We certainly feel no hostility to the Franklin and Cumberland Valley Railroads.—Let them be made, and if *that* is the *shortest* and best *route*, (by shortest we mean soonest travelled,) *it* will take the business, and has nothing to fear from our route. If ours is the best, let it be made, and have the advantages which Nature gave it.

But to return to Mr. Chambers' illiberal Report. He makes the difference in distance from Philadelphia to the junction of the two roads, with the Baltimore and Ohio Railroad at or near Hagerstown but 5 miles, when, in truth, it is 29 miles, and so he must have known. Lancaster is the point from which both routes diverge, and unite again at Hagerstown, or its immediate vicinity; for all our purposes, Hagerstown may be taken as the common termination. Take the present road on both routes:—

From Lancaster to York, it is	22	miles.
From York to Gettysburgh,	28	"
From Gettysburgh to Hagerstown,	32	"
	82	miles.

By the Cumberland Valley Route—

From Lancaster to Harrisburgh,	40	miles.
From Harrisburgh to Chambersburgh,	51	"
From Chambersburgh to Hagerstown,	20	"
	111	miles.
	82	"
Difference in favor of the York route,	29	miles.

Admitting this route to curve more than the Chambersburgh route, say at most, 4 miles, still this will be 25 miles shorter than the Franklin Railroad. Chambers has hunted up and quoted an old silly and false report made by a boy employed by the State authorities some ten years since, to make a false report about the Sonthern Route to punish ouranti-improvement spirit!

We regret the insiduous report of Mr. Chambers, who might have sustained the interests of his own route without slandering and misrepresenting ours. It is the index of a narrow mind.

Items.

From the 1st of May to the 31st of December, 1836, 730,000 passengers were conveyed on the railroad from Antwerp to Brussels; the receipts amounted to 734,236f.

Pig iron has been reduced by the iron works in the neighborhood of Bradford, £1 a ton. A similar reduction has taken place in Wales.—[Times.]

The *German Courrier* gives the following of the 12th inst., from Vienna:—"Some new iron mines of considerable extent have been discovered at Eisenertz, in Styria, which place has long been celebrated for its rich mines of that metal; upwards of three hundred thousand quintals are annually drawn from the mines of Erzberg, and it is thought that those just discovered will be equally productive. It has been declared by persons acquainted with the article that the Styrian steel is harder and more flexible than that of England, with which it can also compete in cheapness of manufacture.—English steel costs here from 120 to 160 florins the quintal; whereas the price of the quintal of Styrian steel will not exceed 60 florins. Austria may therefore dispense with English steel, while that of Styria will become an important branch of commerce, not only in Europe, but in other parts of the world. The Prince Lobkowitz encourages with all his efforts this new undertaking, which yields abundant profit."

M. Degousse has succeeded in piercing a fourth Artesian Well, at Meaux. The depths of the bores of these wells are from 164 to 295 feet English, and the water rises to from 3¼ feet to 16 feet 4 inches English. The quantity obtained at the Fulling Mills is 66 English gallons a minute, and that at the Seminary 37 gallons. The water is very soft, and has been proved by an analysis to be fit for every purpose.

At Saint Denis de Thibcult, near Rouen, a discovery has lately been made of a large spherical Roman vase, of Terra Cotta, 5½ feet in circumference, inclosing a square vitrified vase, about a foot high, filled with burnt bones and ashes. These relicts are in perfect preservation, and M. Quesnel, on whose estate they were found, about four feet below the surface, has deposited them in the museum of antiquities at Rouen.

M. Aime Grimaud has within these three days made an experiment on the Seine of a new invention, by means of which vessels may be impelled across the seas in every direction without the use of fuel. Additional force will be given to windmills, and artificial falls of water may be formed so that such provinces as are now deficient in this necessary of life may be supplied. The new machine is composed of several wings forming together a wheel which is supported by a vertical mast that gives a motion to a transversal beam, at each extremity of which is a paddle wheel. This machine is so constructed that it acts in every direction of the wind, and has all the force of a steam-engine. M. Grimaud has succeeded in making his way up the river against the current, which was strengthened by the late floods, and in traversing in it all directions, even in the teeth of the wind.

We have it from undoubted authority that a propelling power has been discovered for vehicles on common roads, which can be applied to mail-coaches, etc., at the cost of 6d. per mile for a four horse power.—The inventor has obtained a patent in England, and is obtaining a similar instrument in the principal countries of Europe, and in the United States.—[Cumberland Packet.]

A mechanician of Cherbourg has just invented a press for the extraction of oil, which possesses very decided advantages over every other press hitherto in use, as a

greater power can be given to it, and it will extract twice the quantity of oil in the same time as the other presses hitherto in use.—The force of a single man applied to this machine will produce a pressure equal to 400,000 pounds weight. The new press also occupies but little room, as it will stand in the space of four square feet.

The National Intelligencer gives the following biographical sketch of the late John Loudon McAdam:

Mr. McAdam was of the proscribed clan of the McGregors, being, in his own person, the head of one of the branches of that family, of which the territorial appellation was Waterhead. His father took the name of McAdam, when that of McGregor was forbidden. In early youth, Mr. McAdam came to this country, as the adopted son and heir of an uncle of the same name, whose widow died within the last ten years in New-York. After residing here seventeen years, during which period he married, Mr. McAdam returned to England and established himself near Bristol. At this place he commenced, about the year 1810, those experiments which have since converted the roads of England into the best in the world. By this improvement he has made himself one of the great benefactors of that nation, and indeed, of our own, though his system has been but lamely imitated here. He was conscious of the extent of his services, which have never received the reward they deserved. He was twice offered knighthood, and once a baronetcy by the British government, both of which titles he declined, preferring his confiscated but hereditary claims to "Waterhead," with true Scottish fidelity, to the possession of those more common distinctions. His second son has, however, recently accepted the former rank, and is the present Sir James McAdam. As this gentleman occupies the situation of superintendent of the metropolitan roads, he is commonly mistaken for his father.

Mr. McAdam was twice married, and both times to ladies of well known New-York families. His first wife was Gloriana, the daughter of William Nicoll, Esq., of Islip, the collateral descendant and heir of Col. Nicoll, the first English governor of the colony, and the proprietor of one of its largest manors; and his second wife was Anne Charlotte De Lancey, the eldest daughter of John Peter De Lancey, Esq., of Mamaroneck, Westchester, whose father died at the head of the government of the same colony in 1760. By his first wife, he left several children.

THE BUILDER'S MANUAL.

(Continued from page 158.)

THE METHODS OF LAYING BRICKS.

The strength of walls and piers of brickwork depends as much on the manner in which the courses are placed, as on the quality of the materials employed in construction; for, however good the bricks may be, if they are not so placed as to strengthen one another, and mutually confine each other to their several situations, the work cannot have the requisite stability. If the perpendicular joints in the several courses are too nearly over each other, the work is liable to crack in a vertical direction, and if the bricks, forming the outer and inward face of the wall do not bind together, the work will bulge, and the wall must at last fall to pieces by its own weight. It is therefore important for us to determine the best method of laying bricks, and we shall endeavor to describe the means adopted by builders to prevent the separation of the work, and give a solid bearing to every part.

Those bricks which are so placed that their length is in the direction of the wall, are called stretchers; and those which are placed with their length across the wall, are called headers.

The two principal methods of bricklaying are severally called English and Flemish bond. English bond is generally preferred by builders as being decidedly the strongest, though it has not so neat and regular an appearance as Flemish. English bond consists of alternate courses of headers and stretchers; thus, one course is formed with headers, that is, with bricks crossing the wall; the next with stretchers, that is, with bricks having their length in the same direction as that of the wall: the headers serve to bind the wall together in a longitudinal direction, and the stretchers prevent the wall from separating crossways.

Flemish bond consists in placing a header and a stretcher alternately throughout every course. This method of bricklaying is very much adopted, on account of the regular appearance it gives to the face of the work, but in order to have this result, a header must always be placed over the middle of the stretcher below it. The Flemish bond, though inferior in many respects to the English, is very generally used, and an inferior brick is placed in the interior of the wall, and those which form the face, are picked or chosen, that the work may have a uniform color. The greatest fault in this method of bricklaying is, that by making a putty joint on the face, the interior bricks do not range level with the exterior ones, and this prevents the builder from connecting his work by headers extending through the whole thickness of the wall.

THE CARPENTER.

A Carpenter is a workman who executes that combination of timbers which may be considered, in connexion with the bricklayer's work, as the frame or skeleton of a building. There is, however, this difference between the objects of the one and of the other; the bricklayer has only to consider the downward pressure or force of gravity, and the forces which may be exerted, tending to destroy the perpendicular; the carpenter must also study the relative disposition of parts, so as to alleviate as much as possible the strains which may be exerted upon the building.

Carpenter's work is distinguished from that of the joiner's; for while the one has regard to the substantial parts of an edifice, those which give solidity and strength, such as the construction of roofs, floors, and partitions, the other consists in providing for the ornamental and convenient. A carpenter should be well acquainted with the strength and character of the materials he uses, and especially as he employs them in great masses. He should also be careful not to overload a building, or to employ larger timbers than are absolutely necessary; for, if there were no danger in so doing, economy would dictate the necessity of this care. It is then important that the carpenter should be able to ascertain the dimensions required for the several parts of a building, so as to produce a maximum of strength, without overloading the walls or his own work, and at the same time, to avoid the danger which must result from a scantiness of material. There are then two things to be considered, the strength of the materials, and the stress to which they are subject in certain situations. A timber, or framing, may be strained in various ways, but of these we shall speak presently; our first object is to describe the materials themselves, referring particularly to those woods which are most commonly used.

Oak.

There are many species of oak, but that known among botanists, as the "Quercus robur," is most esteemed. It may, however, be necessary to remark in relation to this, as well as all other kinds of timber trees, that the character of the wood must greatly depend upon the soil in which it grew, and the degree of attention it received from the cultivator. The oak of Sussex is most esteemed by builders, but, whether the preference is dictated by experience or prejudice, we are unable to state: but we are not acquainted with any series of experiments that warrants the choice, and it is not fit that practice should be regulated by unproved statements.

A Norway oak, called clapboad, is frequently brought to London; and also one that is grown in Germany, called Dutch wainscot, being imported from Holland, to which country it is brought in floats down the Rhine. Both these woods have been extensively used in this country, and it is probable that the wainscot will be still employed for many purposes, for, though it is softer and the grain more open than the English oak, it is also less liable to warp.

Oak is the most durable of all woods, and surpasses them in strength and stability. Vitruvius says, that it has an eternal duration, and when we see the beautiful specimens which have remained untouched by time, in our oldest buildings, though all other materials are crumbling around them, we feel an inclination to assent to his opinion. It is, however, only the close grained varieties that deserve this character; and it is no small addition to the professional skill of the architects of past ages, that by the choice of the best materials, they gave a perpetuity to their works, which few, if any, of the present day can rationally expect.

Oak may be used in all those places where strength is required, and its flexibility does not present an objection. For sleepers, wall-plates, ties, king-posts, and other such purposes, it should be used more frequently than it is. But its chief applica-

tion is for ship-timber, and some thousand loads are annually used in our Dock-yards. This remark suggests the propriety of using it in all those places which are much exposed to the variation of weather.

Fir.

There are many species of fir, all of which are more or less used in building; but there are three sorts in particular that require our attention, being more used than any others: these are the Pinus Sylvestris, or yellow fir; the Pinus Abies, or spruce fir; and the Pinus Resinosus, or pitch pine.

The red or yellow fir is a native of Scotland, and the Northern counties of Europe. This tree is more abundant than all others in the boundless forests of Norway and Sweden. It grows to an immense height, very straight, and with few branches. The fir timber of Norway is brought into this country under the name of masts and spars; those which are eighteen inches or more in diameter are called masts, and are frequently eighty feet in length; others are called spars. In several parts of Scotland the yellow fir is grown, and attains a great height.

The yellow fir or deal is much used in building, and is a very durable wood; according to some authors, as much so as oak. But whether this be the case or not, it has many qualities which render it exceedingly useful to both the carpenter and joiner. It is light and easily worked, yet stiff, and capable of bearing great weights. It is commonly employed for framing, girders, joists, and rafters; for joiner's work also it is almost universally used.

White fir is also a native of the north of Europe; and is especially abundant in Norway and Denmark, and is sometimes called the Norway spruce. The larger quantity of that which is brought into this country, is imported from Christiana in deals and planks. Deals are formed by cutting the fir tree into thicknesses of generally about three inches, the width being about nine. As fir is exceedingly liable to shrink, it is very necessary that it should be well seasoned, and this is especially the case with white fir, which should never be used in those places which are exposed to atmospheric changes. We are informed by travellers, that the tree is first cut into three lengths of about twelve feet long, each of which are divided into three deals.

The pitch pine, which is a native of Canada, is sometimes employed by the carpenter, but not so frequently as those kinds we have already mentioned. This wood is much heavier than either of those we have already described, but it is less durable. Its name has been derived from the circumstance of its containing a large quantity of resin, which makes it very unfit for building purposes, and very difficult to work.

Larch.

There are three species of Larch; one is a native of Germany and the neighboring countries, the other two are Americans. The European species (Pinus larix,) sometimes grows to a great height, and contains a large quantity of timber; one which was cut at Blair Athall in 1817, is said to have contained 252 cubic feet of timber; this, however, was a tree of remarkable size.

Mr. Tredgold, in his most interesting and useful work on Carpentry, has made some appropriate remarks upon the character of this wood. "It is extremely durable in all situations, failing only where any other kind would fail: for this valuable property it has been celebrated from the time of Vitruvius, who regrets that it could not be easily transported to Rome, where such a wood would have been so valuable. It appears, however, that this was sometimes done, for we are told that Tiberius caused the Naumachiarian bridge, constructed by Augustus, and afterwards burnt, to be rebuilt of larch planks, procured from Rhœtia. Among these was a trunk 120 feet in length, which excited the admiration of all Rome. The celebrated Scamozzi also extols the larch for every purpose of building, and it has not been found less valuable when grown in proper soils and situations in Britain. In posts and other situations, where it is exposed to damp and the weather, it is found to be very durable. In countries where larch abounds, it is often used to cover buildings, which, when first done, are the natural color of the wood, but in two or three years they become covered with resin, and as black as charcoal; the resin forms a kind of impenetrable varnish, which effectually resists the weather. Larch is not attacked by common worms, and does not inflame readily.

The larch is useful for every purpose of building, whether external or internal; it makes excellent ship-timber, masts, boats, posts, rails, and furniture. It is peculiarly adapted for flooring-boards in situations where there is much wear, and for staircases; in the latter, its fine color, when rubbed with oil, is much preferable to that of the black oaken staircases to be seen in some old mansions. That we may not give an erroneous estimate of the value of the larch as applicable to building purposes, it is necessary to state that it is worked with more difficulty than fir, and is even more liable to warp, unless it be perfectly seasoned.

Beech.

The beech (Fagus sylvatica,) is not much used in building, on account of the very rapid decay it undergoes whenever it is affected by dampness. It grows in our own, as well as in most European countries; but it prefers a dry soil, and, in England, flourishes most in chalk districts.—There are two kinds of beech-wood; one is called the brown or black beech, the other the white; it is, however, generally supposed that the difference is due to the character of the soil, and not to any specific distinction. Beech is a hard, fine-grained wood, and has been much used for the commoner kinds of household furniture.—It may appear singular that it should be well adapted for piles, provided it is constantly immersed in water; but damp destroys it very readily. Nor is this the only objection to its being used in building; for even the best, which is the white, is soon injured by worms, whether in a dry or damp situation.

Ash.

There are several species of ash, but the one which is most common in Europe, called by botanists the Fraxinus excelsior, is the most valuable. The tree sometimes grows to an immense size; but its mean diameter is said not to exceed twenty-three inches. The texture of the wood is alternately compact and porous, and presents a veined appearance, the veins being darker than those of the oak. On account of its great flexibility, and want of durability, it is not ever applied for framing or for timbers. From the experiments which have been made, it appears that it is tougher and stronger than oak, and, were it not for its great flexibility, might be, in many instances, advantageously employed by the carpenter. It is not, however, without a use in the arts, being exceedingly well adapted for many parts of machines and carriages.

Elm.

Five species of elm are found in this country; but the wych elm (Ulmus campestris,) and the smooth-barked elm (Ulmus glabra,) are most valuable. Elm decays rapidly when exposed to variations of weather; but is durable when kept constantly dry, or constantly under water. The piles upon which Old London Bridge was erected, were elm, and their soundness, after an exposure to water for some centuries, proves the truth of one of these statements. It is a porous and generally course cross-grained wood; and, on this account, should never be used in any piece of framing where a strain is to be supported. But, in addition to this, it is liable to shrink both in breadth and length, though it is not readily split. It is by no means an important wood to the builder; but a large quantity is used in this country. For many hydraulic works it is very useful; some parts of ships are constructed of it; and it is generally employed for coffins, piles, and wet planks. The wood of the wych elm is preferred to all others.

Chesnut.

The chesnut (Fagus castanea,) is one of the most long-lived of all European trees. It is a native of many parts of Europe, and was at one time very common in England, yielding the principal timber at the time. The roof of King's College, Cambridge, is made of chesnut, which is one instance of its durability in a dry state. It is also well adapted for water-pipes, casks, and other vessels intended to hold fluids. When thoroughly seasoned it will neither shrink nor swell, and may be applied for all those purposes for which oak is used, and in some instances is more useful. The wood is hard, and, when young, tough and flexible. It is not always easy to distinguish between oak and chesnut, for they much resemble each other in color and in grain; but they may be known, says Sir Humphrey Davy, "by this circumstance, that the pores in the alburnum of the oak are much larger and more thickly set, and are easily distinguished; while the pores in the chesnut require glasses, to

be seen distinctly." The wood of old trees is generally brittle, and should never be used in those situations where it will be subject to a considerable strain. It has also been stated, that when chesnut is shut out from the access of air, it quickly decays. It is much to be regretted that the culture of this tree, at once ornamental and useful, should be so much neglected in England. In some instances it has been known to live from eight hundred to a thousand years; and its full and beautiful foliage might induce the land proprietor to propagate it, even if he should be uninfluenced by its usefulness in the art of building.

Walnut.

The common walnut (Inglans regia,) is a native of Persia; but was once cultivated in this country as much for its wood as its fruit. It is a greyish-brown wood, with a fine grain; but, if it were not scarce, and could be obtained by the builder for the same money as the woods now employed by him, it would be very unfit, on account of its flexibility and aptness to split, for all those situations where a weight is to be sustained; though it was sometimes used for this purpose in former times. It is now chiefly used for gun-stocks, handles to steel instruments, and for furniture. It is less liable to be attacked by worms than perhaps any other wood, excepting cedar.—For some building purposes, particularly for some joiner's work, it might be advantageously employed, could the supply be sufficient.

Mahogany.

This wood is the produce of a tree called the Swietenia mahogoni. It is much used by cabinet-makers, and frequently by joiners for doors, hand-rails, tops of counters, and other ornamental work. The tree is a native of the West India Isles, and of the Bay of Honduras in America. On account of its costliness, it cannot be extensively used in this country by the carpenter, though its qualities are such as would make it otherwise desirable. The Spanish mahogany, or that which grows in the West Indies, is most esteemed, and is imported in lengths of about ten feet, and from twenty to twenty-six feet square.

Teak Wood.

Teak wood, or Indian oak, is obtained from the Coromandel coast. It is a light and durable wood, easily worked, and equal if not superior to oak in strength and stiffness. It is chiefly used for ship-building; a purpose for which it is well adapted, being of an oily nature, and yielding good tar.

Poplar.

Several kinds of Poplar grow in England, but none of them are frequently employed by builders. The wood has a beautifully clean grain; it is light, though not very strong; is easily worked; and may be sometimes used for flooring in those situations where there cannot be much wear.

—

The woods we have described are the most important of those used by the carpenter and joiner. To distinguish the one from the other, the reader must accustom himself to examine specimens carefully; for it is impossible, by any description, to give him a capability of doing so. Our object has been to relate the characters and properties of the several kinds of timber, as deduced from the experiments which have been made by practical and scientific men. There is one thing, we think, that will particularly strike the reader's attention, and should be constantly borne in mind: the same wood is not equally useful in different circumstances; and when we discover that it possesses durability in one situation, it by no means follows that it will have the same property in another. A wood may be admirably suited for floors, but it may be altogether unsuited for timbers, and all situations where great weights are to be sustained.

DECAY OF WOOD.

Allusion has been frequently made in the preceding remarks to the fact, that wood is, under some circumstances, susceptible of decay. Some woods decay much more rapidly than others; but they will all, in some situations, lose their fibrous texture, and, with it, their properties. But all circumstances are not equally favorable to decay; for it will be evident that there must be some arrangement of causes to produce this effect. To ascertain the causes which act upon woods, and effect their destruction, is an important object both to the builder and to the public; for, untill this has been done, we cannot ever expect to ascertain any general principle that may guide us in our endeavor to avoid those circumstances which have a tendency to encourage the destruction, or to propose a remedy for the evil. The ravages which are constantly made upon all our works of art, give a character of insecurity to our labors; for the things which men accomplish with great perseverance and difficulty, in a length of time, are, in a few years, destroyed by invisible agents. In studying the decay of wood, there are three things that demand our attention, the causes, the circumstances under which those causes are most active, and the means by which they may be destroyed, or their effects in some degree neutralized.

CAUSE OF THE DECAY OF TIMBER.

All vegetable as well as animal substances when deprived of life are subject to decay. From a very early period attempts have been made to prevent this decomposition; and in some degree these attempts have been successful, more especially with animal bodies. The Egyptians were acquainted with so perfect a means of embalming animal substances, that the bodies of men and animals prepared by its earliest inhabitants have combated for centuries the influence of time, and have been found in a perfect state by our contemporaries. This being effected, it is reasonable to hope that some means may yet be provided that shall arrest the destruction of vegetable substances. It is not to be expected that it will ever be possible to give a perpetuity to a particular form of substance, but it is possible to remove in part the cause, and thus to give a lengthened continuance to one particular constitution of elementary principles.

If the trunk or branch of a tree be cut horizontally it will be seen that it consists of a series of concentric layers, differing from each other in color and tenacity. In distinct genera or species of trees these layers present very different appearances, but in all cases the outer rings are more porous and softer than the interior. Wood is essentially made up of vessels and cells, and the only solid parts are those coats which form them. These vessels carry the sap which circulates through the tree, gives life and energy to existence, and is the cause of the formation of leaves, flowers and fruit. But when the tree is dead, and the sap is still in the wood, it becomes the cause of vegetable decomposition by the process of fermetation. Fourcroy, the celebrated chemist, says, there are five distinct species of vegetable fermentation, the saccharine, the coloring, the vinous, the ascetous, and the putrefactive. But we are but little acquainted with the process by which the decomposition is carried on, but the effect is certain unless the albumen, one of the constituent proximate principles of vegetable matter, be disposed of, or be made to form with some other substance a compound not subject to the same process of decay. We are, it appears, indebted to Mr. Kyan for the discovery that albumen is the cause of putrefactive fermentation, and the subsequent decomposition of vegetable matter.

Circumstances favorable to Vegetable Decomposition.

Wood is not equally liable to decay under all circumstances. When thoroughly dried it is not so quickly decomposed as when in its green state, for in the latter condition it has in itself all the elements of destruction, and it is scarcely possible to prevent the effect if it be then used in building. But supposing the timber to be perfectly seasoned, it is more liable to decay under some circumstances than others. Timber is most durable when used in very dry places. Time, however, which decays all things but the thinking principle, affects the hardest wood even when employed in the most advantageous circumstances.—Yet timber which has been used in places where it receives no other moisture than that which it absorbs from the atmosphere has been known to last for seven or eight hundred years, though its elastic and cohesive powers are invariably injured.

When timber is constantly exposed to the action of water the decomposition effected will depend upon the nature and chemical composition of the substance. Vegetable matter is a compound, and an ingredient may be removed without destroying the whole. A portion of wood may be soluble in water, but other parts are not; so that after a definite period the continued action of water upon a piece of timber ceases, and if it can sustain the influence of this cause until that period, there is no termination to its endurance, except from those casualties which it might have been able to bear in its original state, but cannot after the removal of that portion of its substance soluble in water. Should a piece of timber

that has been for a long time exposed to water be brought into the air and dried, it will become brittle and useless: this is usually the case with the timber taken from peat bogs, unless it should happen to be impregnated with some mineral substance that has stayed the action of the water.

When wood is alternately exposed to the influence of dryness and moisture it decays rapidly. It appears, from experiments that have been made, that after all the matter usually soluble in water has been removed, that a fresh maceration and contact of the air produces a state of matter in that which is left which renders it capable of solution. A piece of timber may then in this manner be more and more decomposed, until at last the whole mass is destroyed. The builder is sometimes compelled to use wood in places where it will be exposed to alternate dryness and moisture; fencing, weather boarding, and other works, are thus exposed. In all these cases he may anticipate the destructive process and provide against it. The wood used in such situations should be thoroughly seasoned and then painted or tarred, but, if it be painted when not thoroughly seasoned, the destruction will be hastened, for the evaporation of the contained vegetable juices is prevented.

There is one other circumstance to be considered, the influence of moisture associated with heat. Within certain limits the decomposition resulting from moisture increases with the temperature. The access of the air is not absolutely necessary to the carrying on of this process, but water is; and as it goes on, carbonic acid gas and hydrogen gas are given off. The woody fibre itself is not free from this decomposition, for, as the carbonaceous matter is abstracted by fermentation, it becomes more susceptible of this change. This statement is proved by the circumstance, that when quick lime is added to the moisture, the decomposition is accelerated, for it abstracts carbon. But the carbonate of lime produces no such effect: a practical lesson may be learnt from this fact; if timbers be bedded in mortar, decomposition must follow, for it is a long time before it can absorb sufficient carbonic acid to neutralize the effect, and the dampness which is collected by contact with the wet mortar increases the effect. When the wood and the lime are both in a dry state, no injury results, and it is well known that lime protects wood from worms.

When the destructive process first becomes visible it is by the swelling of the timber and the formation of a mould or fungus upon its surface. The fungus or cryptogamic plant rapidly increases, and soon covers over the whole surface of a piece of timber, having a white, greyish-white, or brownish hue. When the seeds of destruction are thus once sown they cannot be readily eradicated; it need not therefore be a matter of surprise that many of the foreign woods used in this country have so little perpetuity when the reader is informed, that the heat of the hold of the vessel in which they are brought is sufficient of itself to cover them with mould or mildew. Heat and moisture may be considered the prominent causes of the rapid decomposition of vegetable subtances. When wood is completely and constantly covered with water this effect is not produced, and we have an example in the fact, that, although those parts of a vessel which are subject to an occasional moisture are liable to dry rot, yet those parts which are constantly beneath the water are not ever thus affected; and although the head of a pile, which may be now and then wetted by the casual rise of the tide, and is then dried again by the sun, may be decomposed, yet those parts which are always covered with water have been found in a solid state after centuries of emersion.

MEANS OF PREVENTING DECAY.

It cannot be thought a matter of small importance that we should have some means of preventing the decay to which wood appears to be so subject. Many experiments have been made under the hope of discovering a simple and effective process for the accomplishment of this purpose. Whenever there is a desirable object which seems to offer a prospect of fame or wealth to him who can secure it, there will always be many persons who, impelled by a sanguine disposition, or by bad motives, will propose schemes which are not founded on scientific principles, and frequently produce more harm than good. This we have frequently seen, and in a time like the present, when all men seem to be speculating for an existence, rather than seeking wealth and honorable independence by the legitimate exertion of intellect or skill, the public are peculiarly exposed to the impositions of the weak and of the crafty. Scarcely a month elapses but we hear some new specifics against the decay of timber, and yet when brought to the test of experiment they are found to be utterly useless. Some fortunate observation, some unexpected result, as the patentees inform us, led to the discovery; and as to the reason why this or that process should be effective, they neither know nor care. We do not, however, in these censures include the process proposed by Mr. Kyan, which we shall presently have occasion to explain.

Felling Timber.

Something may be done towards the prevention of decay by felling the timber at a proper season. A tree may be felled too soon or too late, in relation to its age, and to the period of the year. A tree may be so young that no part of it shall have the proper degree of hardness, and even its heart-wood may be no better than sap-wood; or a tree may be felled when it is so old that the wood, if not decayed, may have become brittle, losing all the elasticity of maturity. The timber grower is more likely to adopt from interested motives, the former of these errors, and fell his timber too young. His object is to obtain as much timber as possible, but a tree is not in its maturity when it ceases to grow, for after this period its fibres gain firmness and density. The time required to bring the several kinds of trees to maturity varies according to the nature of the tree and the situation in which it may be growing. Authors differ a century as to the age at which oak should be felled, some say one hundred, and others two hundred years; it must then be regulated according to circumstances. Although the oak of our own country is so valuable to the builder, yet it is to be feared that it is seldom allowed to attain its maturity, the grower being anxious to sell and the builder to buy; the one seeking to obtain its value himself, rather than leave it to posterity, the other to purchase at as low a price as possible, not caring for the character of the timber.

But it is also necessary that the timber trees should be felled at a proper season of the year; that is to say, when their vessels are least loaded with those juices which are ready for the production of sap-wood and foliage. The timber of a tree felled in spring or in autumn, would be especially liable to decay; for it would contain the element of decomposition. Mid-summer and mid-winter are the proper times for cutting, as the vegetative powers are then expended.

There are some trees, the bark of which is valuable, as well as the timber; and as the best time for felling is not the best for stripping the bark, it is customary to perform these labors at different periods. The oak-bark, for instance, is generally taken off in early spring, and the timber is felled as soon as the foliage is dead; and this method is found to be highly advantageous to the durability of the timber. The sap-wood is hardened, and all the available vegetable juices are expended in the production of foliage. Could this plan be adopted with other trees, it would be desirable; but the barks are not sufficiently valuable to pay the expense of stripping.

Seasoning Timber.

Supposing all these precautions to be taken in felling timber, it is still necessary to season it; that is, to adopt some means by which it may be dried, so as to throw off all the juices which are still associated with the fibres of the wood. As soon as the timber is felled, it should be removed to some dry place; and, being piled in such a manner as to admit a circulation of air, remain in log for some time, as it has a tendency to prevent warping. The next process is, to cut the timber into scantlings, and to place these upright in some dry situation, where there is a good current of air, avoiding the direct rays of the sun. The more gradually the process of seasoning is carried on, the better will be the wood for all the purposes of building. Mr. Tredgold says, "It is well known to chemists, that slow drying, will render many bodies less easy to dissolve; while rapid drying, on the contrary, renders the same bodies more soluble. Besides, all wood, in drying, loses a portion of its carbon, and the more in proportion as the temperature is higher. There is, in wood that has been properly seasoned, a toughness and elasticity which is not to be found in rapidly-dried wood. This is an eqident proof, that firm cohesion does not take place when the moisture is dissipated in a high heat. Also, seasoning by heat alone, produces a hard crust on the surface, which will scarcely ermit the moisture to evaporate from the internal part, and is very injurious to the wood.

"For the general purposes of carpentry, timber should not be used in less than two years after it is felled; and this is the least time that ought to be allowed for seasoning. For joiners' work it requires four years, unless other methods be used; but, for carpentry, natural seasoning should have the

preference, unless the pressure of the air be removed."

Many artificial methods of seasoning timber have been proposed; and a brief notice of some of those which have been found most useful will be required.

Seasoning by a Vacuum.

All the vegetable and animal juices are kept in their particular vessels by the pressure of the atmosphere; remove that pressure, and the animal fluids could no longer be retained by the veins and arteries, and the vegetable fluids would exude and appear on the surface of the plant. Place a small piece of wood beneath the receiver of an air-pump, and exhaust the air, and in a short time the wood will be covered with drops of the liquid which can no longer be retained, as the atmospheric pressure is removed. Mr. Langton thought that this might be applied to the extraction of those vegetable juices in timber, known to be the cause of its decay. An arrangement was therefore adopted, by which large masses of timber might be enclosed in a vessel having such machinery as would be necessary to exhaust the air, heat being at the same time employed so as to vaporize the exuded juices. The vapor is conveyed away by pipes surrounded by cold water, and is condensed into a liquid, having a sweet taste. This process is deserving of more attention than has hitherto been given to it.

Water Seasoning.

It has been stated by various writers, that wood immersed in water for about a fortnight and then dried, is better suited for all the purposes of the joiner. There can be no doubt that immersion in water tends to neutralize the effect of the saccharine matter, by dilution or an almost absolute removal. This process has also the effect of rendering the wood less liable to crack and warp; but, if we judge by Duhamal's experiments, it injures the strength of the material, and should not, therefore, be adopted in any instance where the timber is to be employed by the carpenter. Evelyn recommends boards that are to be used for flooring, to be seasoned in this way: "Lay your boards," he says, "a fortnight in water (if running, the better, as at a mill-pond head); and then setting them upright in the sun and wind, so as it may pass freely through them, turn them daily; and thus treated, even newly-sawn boards will floor far better than those of a many years' dry seasoning, as they call it." Timber intended for ship-building may be immersed in sea-water; but that which is to be used for houses ought to be placed in fresh water; for if timber, or any other building material, be impregnated with salt, it will ever be wet, for salt attracts moisture so readily, that it may be used approximately as a hygrometer. Plaster or mortar made with salt water, will always sweat with a moist atmosphere; and timber intended for the house-carpenter, if impregnated with salt, will always be damp, or covered with a crystalized efflorescence. Much injury, however, is sometimes done by not thoroughly immersing the timber; the carpenter should therefore be careful, when he employs this method of seasoning, that the timber is entirely covered with water, and that it be not exposed to its adtion for too long a time.

Seasoning by Smoking and Charring.

Authors who have written upon the seasoning of timber have spoken of the effects of smoke, and the carbonization of the surface. We have adopted the same arrangement, but it will be necessary to caution the reader against a misconception of a very inaccurate expression. Timber cannot be seasoned by either smoking or charring, but seasoned timbers may be made more capable of resisting the effects of certain situations by these processes. Should a piece of timber, containing the vegetable juice, be smoked or charred, it would be a means of accelerating decomposition; for preventing all means of evaporation, the common sources of protection, would become sources of destruction. But when timber is to be used in situations where it is liable to be attacked by worms, or to produce fungi, it may be desirable to smoke or to char it.

Seasoning by Boiling or Steaming.

Timber is sometimes seasoned by steaming or boiling, both of which means are frequently adopted by ship-builders. The strength of timber appears to be somewhat impaired by these processes, but it is generally less liable to shrink or crack. Duhamel states that he boiled a piece of wood, and then dried it upon a stove, but, in drying, it lost part of its substance, as well as the water contained; and upon a repetition, he found that it had lost still more of its weight. Four hours' exposure to steam or boiling water is sufficient for timbers of ordinary dimensions, and the drying afterwards goes on very rapidly, but it should be done as gradually as possible. The joiner frequently finds it necessary to steam or boil wood, to bend it into a particular curve, and also the ship-builder. It has been stated by writers on ship-building, that boiling increases the durability of timber, and in proof of this, they inform us that the planks in the bow of a ship, which are bent in this way, are never effected by the dry rot.

It may now be inquired whether, after the most perfect seasoning, timber is secured against the process of decay? To this question a negative answer must be given.—However well the timber may be seasoned it will certainly rot if placed in a damp situation, the rapidity of the decomposition depending upon the nature and state of the wood and the activity of the destroying agent. As the builder seldom attempts any other seasoning than that which depends upon drying his timbers, it is absolutely necessary that he should carefully avoid the rise of damp, and adopt every means in his power to prevent this evil. Timbers are usually placed in contact with walls, but it must not be supposed that this is sufficient to keep them from the access of damp, for they are frequently the conducting media. Brickwork very readily absorbs moisture, and also throws it upwards, so that the ends of timbers are in contact with the very source of mischief. To prevent the rise of damp upwards, it is common to use, for a few feet above the foundations, cement, a substance impervious to water, instead of mortar, or to place between the courses zinc or slate.—But that these plans may be effective, the basement walls should be surrounded with an open area, for, if in contact with the earth on their sides, they can be of no value. To prevent dampness from entering in front, the brickwork should be covered with compo, or some substance impermeable to water.

Another thing to be considered, for the security of timbers, is to arrange, in every plan of a building, for a perfect circulation of air. Ventilation is a most important requisite in the construction of a building, although it is generally a matter of very little importance in the consideration of those who have to plan or construct buildings. The ventilation of roofs is by no means difficult, but there are often so many obstacles to the ventilation of flooring, that the designer will not give sufficient attention to his subject to provide against them. These things, however, are not matters of speculation, to be attended to by those who have no higher employment, but are absolutely necessary for the construction of a work that is intended to survive the builder.

But we must pass from this subject to a consideration of some of those plans which have been proposed to secure well seasoned wood from the effects of dampness, and the ravages of insects, though it must be confessed that but few of them have been successful.

Attempts have been made from a very early period to prevent the destruction of wood, by impregnating it with some substance capable of restraining its ravages.—The muriate of soda, or common salt, has been thought a good preservative against decay, when the wood is thoroughly impregnated with it. The wooden posts which support the roof of a salt mine are said to be preserved by the constant infusion of salt, and that a vessel covered with fungus will have her timbers cleaned by immersion in salt-water. Whatever may be the advantages of this process, it is quite certain that it can never be extensively employed, for the salt absorbs water so readily, that the timbers would be constantly damp.

In the year 1670, a Mr. Jackson proposed to immerse timber in a composition of muriate of soda, Epsom salts, lime, potash, salt-water, and other substances; but neither he nor any body else could ever discover the value of this process. This person was permitted to prepare some timber to be used in the National yards, and it was found that vessels built with it was less durable than those in which unprepared wood was used.

Sulphate of iron, or green copperas in water has been recommended as a good mixture, in which to place wood, that is to be used for the purposes of building. It is said that timber boiled in a solution of sulphate of iron, becomes so hard when dry, that moisture cannot penetrate it. This may possibly be the case, but the change must be effected by the removal of some portion of woody fibre, and the admission of the sulphate in its place in the same manner as the wood found in the London clay has been fossilized by that substance.

Lime has been recommended as a preservative against the decay of timber. There is a difference of opinion among writers as to the value of this substance, for the particular purpose. It is well known that quick-

lime with moisture rapidly destroys vegetable matter, but Mr. Tredgold says, that a large quantity of fresh quick-lime in contact with wood, absorbs the water, hardens the sap, and thus, keeping it in a perfectly dry state, renders it very durable. This gentleman quotes the opinion of Mr. Chapman, who says, that vesse's employed in the Sunderland line trade have been forty years old without needing any repair, or showing the slightest evidence of decay in the timbers. A writer, who recommends the impregnation of wood with lime, says, that wood buried in the earth, and surrounded by lime, is protected from the ordinary causes of decay. But Dr. Birkbeck objects to the plan, for he says, assuming such principle to be correct, there is a great inconsistency as to the effects produced upon animal and vegetable matter, and there can be no doubt that the substance which destroys one, will destroy the other.

The attention of scientific men has been recently directed to the experiments made by Kyan, and from the very excellent exposition of his plan, by Dr. Birkbeck, we are induced to hope that it may be found highly advantageous. Having made a great number of experiments with a view to ascertain the primary cause of vegetable decomposition, he was at last convinced that albumen was that cause, and that to neutralize its effects would be to prevent decomposition. Some plan was required similar to that adopted in tanning. The gelatine in animal bodies is quite as liable to decomposition as the albumen of vegetables; but when tannin, the infusion of oak bark, is combined with it, the destructive properties are lost, and the animal matter becomes durable, and almost incapable of decay. Reasoning upon this effect, Mr. Kyan imagined that it might be possible to prevent vegetable decomposition by causing the albumen to form a combination with some other substance; and knowing the affinity of corrosive sublimate for the albumen, he entered upon a series of experiments, which led him to propose the use of that substance as a protection for timber.

A few extracts from the published lecture read by Dr. Birkbeck, before the Society of Arts, may put the subject more clearly before the reader.

"Mr. Kyan inferred that, as wood consists of various successive layers, in which the albumen, or juices containing albumen, circulated freely; it is quite certain that, as these juices within the wood, with the watery parts, fly off by the leaves, that the albumen remains behind, and it is probable that this albumen, which from its nature is peculiarly prone to enter into new combinations, is the thing in wood which begins the tendency to decomposition, and produces ultimate decay, whether that decomposition is attended with the formation of cryptogamic substances, or whether in the less organized form, the change occurs with the simple production of what has been called the Dry Rot. He (Mr. Kyan,) conceived, therefore, if albumen made a part of wood, the latter would be protected by converting that albumen into a compound of protochloride of mercury and albumen; and he proceeded to immerse pieces of wood in this solution, and obtained the same result as that which he had ascertained with regard to the vegetable decoctions. Having done so, it became necessary to employ various modes of experiments as well as comparative experiments. Now it is not clear in what part of the wood the vegetable albumen may be found, though it exists more especially in that part of the tree which is denominated the alburnum or sap, and is found between the heart wood and the innermost layer of bark. The experience of all practical men has confirmed the opinion that this portion of wood is the first to decay.

"It is probable that, as the alburnum becomes successive layers of wood, it loses a quantity of albumen; or that, in consequence of the pressure which takes place by the addition of each successive layer, it becomes so situated, as to lose a part of its exposure to the vessels where a change may occur, and therefore becomes in some measure protected: for that which is one year alburnum or sap, may be, and indeed generally is, proper wood the next.

"The mode in which the application of the solution takes place is in tanks, which may be constructed of different dimensions, from twenty to eighty feet in length, six to ten in breadth, and three to eight in depth. The timber to be prepared is placed in the tank, and secured by a cross-beam to prevent its rising to the surface. The wood being thus secured, the solution is then admitted from the cistern above, and for a time all remains perfectly still. In the course of ten or twelve hours, the water is thrown into great agitation by the effervescence, occasioned by the expulsion of the air fixed in the wood, by the force with which the fluid is drawn in by chemical affinity, and by the escape of that portion of the chlorine, or muriatic acid gas, which is disengaged during the process. In the course of twelve hours this commotion ceases, and in the space of seven to fourteen days, varying according to the diameter of the wood, the change is complete, so that as the corrosive sublimate is not an expensive article, the albumen may be converted into an indecomposable substance at a very moderate rate, and the seasoning will take place in the course of two or three weeks."

Mr. Kyan's method of seasoning has been already tested under circumstances so severe, that they may be said to have proved its efficiency. A piece of oak was five years in the fungus pit in Woolwich yard, a place notorious for the rapid and almost instantaneous destruction of vegetable matter, and it was as sound when taken out as when put in. This was the most severe test to which the method could be subjected, and its having sustained the trial is a proof of the value of the discovery. It has, however, been objected to the process, that the impregnation of timber with corrosive sublimate must unfit it for use in ship-building; but Mr. Kyan has furnished evidence to the contrary, and in our opinion proves that salubrity is one advantage. We strongly recommend the builder to make experiments himself upon wood prepared by Mr. Kyan, by using it in places where decay is rapid.

As the season is fast approaching when clover and other grass seeds will be sown, we deem it advisable to bespeak for their future pastures and meadows, from our agricultural brethren, a liberal bestowal of seed. He who sows *scantily* must expect to reap in a proportionate degree, or to gather more weeds than hay. In every soil there are ample supplies of the seed of every variety of wild and noxious herbage, and if these are not supplanted by a wholesome covering of artificial grasses, they will inevitably germinate, and show their pestilent fronts to the annoyance of proprietors, and the discomfort of their stock: for the earth will be busy in despite of all the maltreatment it receives at human hands.

THE HOLLOW-HORN.—As this is the season of the year when we may expect this disease to make its appearance among the horned tribe, we would remind their owners that by pouring a tea-spoonful of the spirits of turpentine in the cup or cavity in the back of the head of cattle, they may save them from the effects of this always unpleasant, and often fatal disease.

CONSUMPTION OF A GREAT CITY.—Paris in 1822, according to Count Chalrol, consumed the following animals and articles.

931,000	Pigeons.	
1,289,000	Chickens.	
549,000	Turkeys.	
328,000	Geese.	
131,000	Patridges.	
177,000	Rabbits.	
174,000	Ducks.	
Butter and Eggs, value	10,348,800	francs.
Fish, "	3,417,600	"
Oysters, "	599,400	"

From the New-York Farmer.

No. II

GENERAL SKETCHES.

BY H. C.

Having in a former number sketched some of the general features of the Agriculture of New-England, I shall proceed to speak in a cursory manner of some other parts of the country, which I had an opportunity of imperfectly and hastily observing. Every allowance must be made for the observations of a passing traveller. He can at best give only the prominent points, which present themselves; and in regard to these, with the most honest intentions, he may convey very erroneous impressions, for his own impressions may themselves be erroneous. I dare say the experience of many a traveller will bear me out in saying that a country often appears very differently to the same individual in going or returning through it, though he may in each case travel by the same road. To a person, who judges of a country only by passing over it, a clear or a cloudy, a fair or a stormy day will often make a material difference in his judgment. His own condition, his cheerful health or his indisposition will sometimes give unconsciously a coloring to his opinions. The company in which he travels are not always without their influence

upon him; the condition of the taverns, the state of the roads, and the season of the year. Then he is always liable through the ignonorance, or the selfishness, or the prejudices of those whom he meets with to be imposed on by partial or false information. These considerations, and other obvious occasions of mistake in facts and opinions ought to be taken into the account before we charge a traveller either with ignorance, or misrepresentation through negligence or de sign. In truth no just account can be given either of the condition of a country or the character and manners of its inhabitants without a residence among them for some time; and this under circumstances peculiarly favorable to observation.

In the remarks made in my former number, it may be thought by some that I have hardly done justice to New-England. The truth is that the predominant occupations in New-England are not agricultural; manufactures and commerce prevail over others; and agriculture has become only a secondary interest. Yet notwithstanding this, I am satisfied that when the character of her soil and climate are taken into consideration; and the amount of land actually under cultivation are duly considered, the total amount of her productions will be found large in proportion; and creditable to the skill, the persevering enterprise, and the sprit of agricultural improvement prevailing among her inhabitants. Enough at least will be seen to show what might be accomplished by the same labor, enterprise, and spirit, applied in a manner equally judicious and, as far as soil and climate are concerned, under circumstances more conspicuous.

New-York, an empire within itself, has all the elements of agricultural prosperity and improvement. She embraces a large amount of the most productive soil, with the means in profusion for preserving and increasing its fertility. She abounds even in her remote settlements with facilities of access to markets, where the demand is equal to any amount of production, which may be furnished; and with an intelligent, sharp-sighted, and active population, ready to avail themselves of any means which may be presented, for advancing the great, absorbing, overwhelming object of pursuit throughout the whole country, the attainment and increase of wealth. Her commerce, her manufactures, her crowded and busy cities, her soils, her canals, her steamboats, her railroads, her turnpike roads evince a progress in the art of civilized life almost miraculous; place her among the fist class of prosperous and improved communities on the earth; and disclose a destiny, to which she is rapidly approximating, rarely presented in any condition of social life. May her progress in the developement of her immense resources still be onward; and so highly blessed with all the means and elements of social prosperity, may she be true to her higher duties and faithful to interests infinitely more valuable than wealth, the social order, the intellectual cultivation, and the moral improvement of her immense and rapidly increasing population.

Of the Island of New-York, little can be appropriated to cultivation, and little is capable of cultivation; and it is in this respect as ungenial as the roughest parts of New-England. Wealth and luxury however, have sprinkled over those parts of it upon which the dense population of the city has not yet encroached, many beautiful embellishments; and labor bestowed in unstinted measure upon small parcels, and stimulated by the unceasing and absolutely insatiate demands of the neighboring capital, have made some of its unpropitious spots fertile and productive. The abundant and I may say magnificent supply of vegetables and fruits in the market of the city of New-York: and a large proportion of them grown within the immediate neighborhood, indicate an extraordinary amount of labor and skill. The farming on Long-Island, within a distance of ten miles of Brooklyn, towards Jamaica, is in many places very fine, limited mainly to the production of vegetables, fruit, and grass. Beyond this I have had no opportunity of extending my excursions; but what I saw in this distance sevred only to strengthen the desire to proceed further and see more.

The passage up the Hudson now so common and familiar loses none of its interest by repetition. In a fine day it presents an uninterrupted succession of picturesque and interesting objects. The height of the banks however renders it impossible to know much of the cultivation, though occasional views are presented indicating an intelligent and highly improved and productive husbandry. Orange, Duchess, and Columbia have long been celebrated for their improved and successful husbandry; and for their crops, their flocks, and their dairies. The butter of Orange County known in New-York by the name of Goshen butter, has an established reputation throughout the country. It is not all of equal goodness; but the first quality of Goshen butter for ferkin butter deserves all the commendation, which it has received. The advanced price which it always commands, one would think would be a sufficient stimulus to more care, neatness, and skill among other farmers in this most important article of farm produce; but with the exception of the Philadelphia market, where this article is always prime, it must be admitted that few things come to the market of a poorer quality or in a more miserable condition than this; and as to the quality of that which is found at the tables of steam-boats, canal-boats, and hotels, it is in general detestable, and fit only for the making of soap, or the greasing of cart-wheels. In a journey of three thousand miles the public tables in a great majority of cases presented butter of a quality that even our recollection revolts from. Why it is so, what are the causes of failure in the manufacture and preservation of this article, we shall probably hereafter take an opportunity to consider; but almost the whole may be comprehended under one general fault in one part of the process or another; and that is the want of cleanliness. This is one of the cardinal sins of the country. I recollect some years since staying at a lodging house at some Medicinal Springs, at that time a place of much resort, where it was ascertained that the butter from which the public table was supplied was kept in an open ferkin under the bed in the family bed room! The flavor of much of the butter which is put upon the public tables indicated its residence in some depository of broken meat, and sour bread, some musty closet, by the offensive odor of which the "whole lump is levened." I have always admired the ethical arrangement of an old friend, in whose moral calendar cleanliness was ranked next to godliness; and I confess I am sometimes more than half disposed to regard it as important in respect to morals as to comfort.

Dutchess county is distinguished for its excellent wool and the quantity of Pork, which it sends to the New-York market. A large amount of beef likewise is stall fed in Dutchess county. Hitherto I have had an opportunity of glancing only at some of the Dutchess county farming, so much celebrated; but I am anticipating with great interest the pleasure of looking at it with more leisure and advantage at some future time. The farm of Mr. Holbrook at Hyde-Park, I have visited with great satisfaction. He is fortunate in the services and an intelligent and skilful steward. Mr. Thomas Midford whose excellent management, especially in his dairy, and particularly in the raising of young stock, I have peceuliar satisfaction in acknowledging. The calves and young cattle which I have seen reared by him, have been of a superior description and evinced the most skilful and faithful attention. The churning here is done by water power, and all the dairy arrangements are admirable, as I have seen on a former visit. Mr. Midford's crops of corn and of ruta baga have been large and fine, and his ploughing and sowing very superior. The condition of the premises throughout, indeed, garden and

pleasure grounds, as well as farm and its appendages, evince industry and skill on the part of the laborers, and taste and liberality on that of the proprietor.

February 1837. H. C.

From the Farmer and Gardener.

Sowing of Grass Seeds.—Such farmers and planters as may not have put in their grass seeds last autumn should do so as soon as the frost is out of the ground. For *clover*, there is but one opinion as to the superiority of spring sowing, and although many give the preference to sowing timothy seed in August, still there are those, whose opinions are worthy of consideration, that advocate the practice of setting it in spring on the growing wheat or rye: so also, indeed, with respect to almost every other of the artificial grasses.

If you intend to sow *clover* seed alone on your grain fields, you should not think of seeding less than from 12 to 16 pounds to the acre.

Timothy, if sown alone, should be in the proportion of from 2 to 2½ gallons of seed to the acre.

Rye Grass alone 2 bushels to the acre.

If *Clover* and *Timothy* be sown together, from 10 to 12 lbs. of the former seed and a peck of the latter would not be found too much.

If you purpose carrying your mixture still further, sow 10 lbs. of clover seed, 6 quarts of tmiothy, ½ bushel of herd's grass to the acre,—or

Of *clover* 8 lbs., *orchard grass* 1 bushel, *tall meadow oat* 1 bushel, and *herd's* grass ½ bushel.

In Europe the following is in many districts a popular mixture, 2 bushels of *rye grass* seed, and from 12 to 20 lbs. of *clover* seed to the acre.

It is usual to sow the orchard and tall meadow oat in early autumn, but there is no question that they would succeed now. The orchard grass should be moisted with water and permitted to remain so for a day before sowing.

Whatever grass seeds you sow on your winter grain, be sure to pass a light harrow, and roller over them. You need not apprehend any injury to your grain, for although some roots may be dragged out, you will be more than remunerated by the addition you will receive from the tillering of the branches of the plants which will be imbedded in the soil during the process. That the grass seed will derive advantage from being thus securely placed beneath the soil, common sense and reason both concur in affirming. They will be much more likely to escape destruction from birds than if left upon the surface; they will vegetate with greater certainty, and being well fixed in the earth, their roots will be much better able to withstand the droughts of summer and the frosts of winter. We need not say that the operation of harrowing and rolling should be performed when the ground is in a state to bear the treading of the horse without injury, as it will strike the intelligent reader that if done when the ground is *wet*, much injury will result to the grain.

Lucerne—Those who may feel disposed to try their fortune with this valuable grass, can do so as soon as the ground is relieved from the frost and dampness. It should be sown on a dry rich soil, which had been previously well cleaned. From 16 to 20 quarts of seed should be sown. It may be put in with the spring barley and oats. In England and Scotland it is frequently cut four times in a season.

Oats—The earlier, after the frost is out of the ground, that you get your oats in, the better, and if you can possibly spare them, from your other crops, a portion of manure, do so; for you may rest assured, notwithstanding custom has allotted them to grow on the poorest part of the farm, unaided by nutritious substances of any kind, they would be all the better of a dressing of something calculated to urge them forward. It is to be sure in the general by no means a profitable crop, but then it is a most necessary one, and, therefore, should find favor. But should there be no manure to spare, do, if you can, give the soil an extra ploughing, and thus in part atone for your neglectful culture. We often hear farmers complaining of the degeneracy of, and the falling off of this grain in weight, and may not this be accounted for in the fact, that they are generally grown on the very poorest spots that are to be found, and left to grope their way to maturity in the best way they can.

Two or 2½ bushels to the acre is the proper quantity of seed. They should be well harrowed in.

Potatoes—Should the weather admit of it, you should get in your *early potatoes* from the middle to the latter end of this month. But you should not dream of reaping a good crop unless you are liberal in your bestowal of labor and manure in the preparation of the soil. Your ground should have a southern exposure, and either be a good soil naturally, or be made so by art. It should be thoroughly and deeply ploughed and harrowed; then strike your rows about 27 or 30 inches apart, place your sets about 10 inches distant from each other, throw in your rows a goodly portion of unfermented stable manure, then cover them with the soil, either by running a furrow on either side, or by hand-hoeing. In either event, no *clods* should be permitted to come in contact with the sets. As soon as there is the least indication that the potatoes are coming up, run the harrow crosswise the rows; when the potatoes are up two or three inches, plough a furrow on either side from the potatoes; this must be replaced by throwing the furrow back again. This process will greatly improve the tilth of the soil, and thereby afford the young potato plants an additional chance of moving onward in their growth. After the furrow is thrown back, the rows should be gone over with a hand-hoe, cleaned of all weeds, and so regulated as neither to retain too much moisture, nor to present a surface that would easily suffer by drought. In two or three weeks more another ploughing and hoeing will be necessary; for it is important to keep the ground stirred and clean. This second ploughing however should not be so near to the plants in the rows as the former; and after this, the *cultivator* instead of the plough must be used to complete the work in about two or three weeks, which will be determined by the advance of weeds, and the wants of the potatoes.

Carrots and Parsnips.—As soon as the frost is entirely out of the ground, you may begin to sow the seeds of these roots, for field culture, and thence up to the 1st of May, the sooner they are in the larger will be their yield, and as they are alike excellent as food for man and beast, we have always been surprised that comparatively so few were raised. An acre, well prepared and cultivated, in suitable soil, will yield from 500 to 600 bushels, which would be sufficient to keep four cows fully to their milk during the winter.

Manure.—Carry out your manure to your fields in which you intend to use it. If you intend to top-dress your meadows, or growing crops of grain, the sooner that is done the better, taking the precaution never to let your wagons or carts go on either when the ground is soft.

Lime.—If you intend to use any this season, it is time you had made your arrangements for procuring or burning it. If intended to be used on your meadows, the sooner the better it is spread thereon; if on your corn ground, you cannot get it on too early, as it should receive sufficient ploughings to thoroughly incorporate it with the soil.

Ashes.—Do not omit to provide yourself with a sufficient quantity of this delightful substance; to give your corn plants a dressing, however trifling the quantity applied, it will speak out most eloquently.

Fences.—See to your fences and have them thoroughly repaired, and thus secure yourself against the inroads of stock of all kinds.

Tools and Implements.—These must be examined and put in order,—and in fact at this critical period of the year, the farmer should have his eyes on the search in every direction.

From the New-England Farmer.

FARMERS' WORK.

Cows which are expected to calve, ought to be lodged by themselves in some convenient place, under cover for a week or two before calving, as such care may be the means of saving the life of the calf, and perhaps of the dam also. In order that it may be ascertained what is the time when cows may be expected to calve, an account should be kept of the time when each cow is put to the bull. The day and night after a cow has calved, she should be put under cover, her drink should be luke warm, and she should not be exposed to the dampness of the night.

Inflamed teats should be washed with two drachms of sugar of lead in a quart of water. Should tumors appear, apply a common warm mash of bran, with a little lard.

To prevent cows from sucking their own milk, it is said that rubbing the teats frequently with old and strong smelling cheese, is effectual.

The following prescription for drying cows, which continue to give milk till too near the time of their calving; or to expedite their becoming fat enough to be good beef, is taken from *Monk's Agricultural Dictionary*, an English work of established reputation.

"Take an ounce of powdered alum; boil it in two quarts of milk till it turns to whey; then take a large handful of sage, and boil it in the whey, till you reduce it to one quart; rub her udder with a little of it, and give her the rest by way of drink; milk her clean before you give it to her, and as you see need, repeat it. Draw a little milk from her every second or third day, lest her udder be over-charged."

From the New-England Farmer.

FARMERS' WORK.

EWES AND LAMBS.—It is incumbent on every good husbandman and faithful shepherd, to feed his Ewes plentifully for a few weeks before, and for a considerable time after they produce their lambs. Good farmers have told us that they have found it very beneficial to give to each of their ewes about one half a gill of Indian corn a day, for 5 or 6 weeks before they have yeaned, and while suckling, to give them good roots, or some other juicy food. The want of milk in the ewes, is the most general cause of death in the lambs. Keep the mothers well, and their offspring will thrive and be strong.

The *Farmer's Manual* says, "If you have stored more turnips than are sufficient for the use of the table, give them to any stock that will eat them, except your sheep; give to them potatoes, but not turnips at this season, for turnips will injure the lambs."

Weak lambs should be treated in all respects as if they had been drowned, and you was endeavoring to restore them to life. Apply gentle and regular warmth; give them warm milk, frequently, in small quantities, (the milk of the sheep is best,) and if the ewe has milk sufficient for the support of the lamb, you may generally raise it, otherwise the lamb usually dies. It requires more care and labor to nurse one feeble lamb, when its dam yields too little milk for its support than it would for an hundred, if they were healthy and well kept.

If your sheep, whether store sheep or ewes with lamb, have good hay, about a quart of potatoes a day, to each, will it is said be very beneficial, and an ample allowance. But when the object is to fatten them, (says a writer in Rees' Cyclopedia,) about a gallon of potatoes a day, with a little hay will be the proper quantity; but this is dependent in part on the size of the animals, and in part on the quality and quantity of the hay, which is allowed them. Potatoes, besides their use as food for sheep, are said to be very serviceable to those auimals as an article of diet, which usually supersedes the necessity of *medicine*. They have, when given raw, an opening or purgative quality, which is thought to be of use, and to answer a similar purpose with sheep which is effected with swine by brimstone and antimony.

Care should be taken to place in the stable, small tubs or troughs of water for the sheep to drink in. They will do very well in summer without water, as they feed when the dew is on, but they need water in winter, especially if fed mostly on dry food. Deane's N. E. Farmer states that "when sheep have colds and discharge mucus from the nose, good feeding, together with pine boughs given occasionally, will cure them; or tar spread on a board over which a little fine salt is strewed, will induce the sheep to lick up tar, and this will cure a cold."

The *Yankee Farmer*, in giving directions for raising lambs, observes that "great care should be taken when lambs are born, for it is frequently the case that their fore teeth are not cut, which makes it very difficult for them to hold the teat, so as to suck when young and weak, and it is common for lambs to get discouraged, though ever so rugged at first. To remedy this evil rub the thumb nail, or any hard substance, over the gums, sufficiently hard to cause the teeth to cut through, and the lambs will then be able to suck without any difficulty."

Clay has been recommended as useful for restoring and preserving health to sheep. A writer in the New-York Farmer gives the following remarks on this subject:—"I am told on creditable authority, that a gentleman, who was losing his sheep without apparent cause, had occasion to use some clay about his house in the winter, and observed that his sickly flock ate it with avidity; he caused a load to be placed in their yard, much of which was devoured, and his sheep speedily recovered.

"As a cure, therefore, I would recommend clay to be placed in the sheep yard, which can, at worst do no harm, as the animals will not eat it, unless prompted by instinct."

From the New-England Farmer.

CALVES.—The following mode of rearing Calves, adopted by the Society, denominated Shakers, in Canterbury, N. H., was communicated in a letter from Francis Winkley, to Levi Bartlett, of Warren, N. H., and was published in the N. E. Farmer, in 1824; but such have been the changes since that period, in our subscription list that it would probably be new to many of our readers.

"We let calves that come in the fore part of March, suck a week or ten days, then take them from the cow, giving them a moderate allowance of new milk to drink till they have learned to drink it freely; then put in some skimmed milk; and we feed them wholly with skimmed milk, taking care to give it at about the temperature of milk taken directly from the cow, by heating a part of it and mixing it with the rest. Care should be taken not to scald the milk, when heated; also, not to give them any sour milk, for this will make them scour. The trough or vessel in which they drink their milk, should likewise be kept clean, and not suffered to become sour. We let the milk stand about twelve hours before it is skimmed; giving a calf at first about four quarts, night and morning; increasing the mess as need requires, till he is six weeks old, from which time till ten weeks old, he will require, perhaps about 12 quarts per day.

"When about ten weeks old, we begin to diminish the quantity of milk for about the space of two or three weeks, at which time we wean them. During the whole process, from two to fourteen weeks of age, calves should be well supplied with good hay, salt and provender, such as oats, wheat, bran and oil cake, ground fine.

"The particular advantages to be derived from the above method of treatment, are the following:

"1. It is much cheaper than to let them suck in the ordinary way; whereas it makes a great saving of cream for butter, and that without injuring the calves, if they are properly attended to.

"2. It prevents calves from moaning or pining, so much while weaning as they would otherwise do, when taken from the cows.

"3. It not only prevents the cows being injured in consequence of the calves biting the teats, but also prevents their holding back the milk from the milker, which often serves to diminish the quantity of milk afterwards.

"The only disadvantage to be found in the above method of treatment is, that it requires some more labor to feed them, where they thrive equally well in every respect as those do which are permitted to suck in the ordinary way.

Advertisements.

AVERY'S ROTARY STEAM ENGINES.—AGENCY.—The subscriber offers his services to gentlemen desirous of procuring Steam Engines for driving SAW-MILLS, GRAIN-MILLS, and OTHER MANUFACTORIES of any kind.

Engines only will be furnished, or accompanied with *Boilers* and the necessary *Machinery* for putting them in operation, and an Engineer always sent to put them up.

Information will be given at all times to those who desire it, either by letter or by exhibiting the Engines in operation in this city.

Inquiries by letter should be very explicit and the answers shall be equally so.

D. K. MINOR,
132 Nassau-st., New York.

FOR SALE AT THIS OFFICE,

A Practical Treatise on Locomotive Engines, with Engravings, by the CHEVALIER DE PAMBOUR—150 pages large octavo—done up in paper covers so as to be sent by mail—Price $1 50. Postage for any distance *under* 100 miles, 40 cents, and 60 cts. for any distance exceeding 100 ms.

ALSO—*Van de Graaff on Railroad Curves*, done up as above, to be sent by mail—Price $1. Postage, 20 cents, or 30 cents, as above.

ALSO—Introduction to a view of the works of the *Thames Tunnel*—Price *fifty cents*. Postage as above, 8 cents, or 12 cts.

*** On the receipt of $3, a copy of each of the above works will be formarded by mail to any part of the United States.

10 10t

RAILWAY IRON, LOCOMOTIVES, &c.

THE subscribers offer the following articles for sale.

Railway Iron, flat bars, with countersunk holes and mitred joints,

						lbs.	
350 tons	2½	by	½,	15 ft in length,	weighing	4 68/100	per ft.
280 "	2	"	½,	" "	"	3 50/100	"
70 "	1½	"	½,	" "	"	2½	"
80 "	1½	"	½,	" "	"	1 25/100	"
90 "	1	"	½,	" "	"	½	"

with Spikes and Splicing Plates adapted thereto. To be sold free of duty to State governments or incorporated companies.

Orders for Pennsylvania Boiler Iron executed.

Rail Road Car and Locomotive Engine Tires, wrought and turned or unturned, ready to be fitted on the wheels, viz. 30, 33, 36, 42, 44, 54, and 60 inches diameter.

E. V. Patent Chain Cable Bolts for Railway Car axles, in lengths of 12 feet 6 inches, to 13 feet 2½, 2¾ 3, 3¼, 3½, 3¾, and 3¾ inches diameter.

Chains for Inclined Planes, short and stay links, manufactured from the E. V. Cable Bolts, and proved at the greatest strain.

India Rubber Rope for Inclined Planes, made from New Zealand flax.

Also Patent Hemp Cordage for Inclined Planes, and Canal Towing Lines.

Patent Felt for placing between the iron chair and stone block of Edge Railways.

Every description of Railway Iron, as well as Locomotive Engines, imported at the shortest notice, by the agency of one of our partners, who resides in England for this purpose.

Mr. Solomon W. Roberts, a highly respectable American Engineer, resides in England for the purpose of inspecting all Locomotives, Machinery, Railway Iron &c. ordered through us

A. & G. RALSTON.
28 tf Philadelphia, No. 4, South Front st.

ALBANY EAGLE AIR FURNACE AND MACHINE SHOP.

WILLIAM V. MANY manufactures to order, IRON CASTINGS for Gearing Mills and Factories of every description.

ALSO—Steam Engines and Railroad Castings of every description.

The collection of Patterns for Machinery, is not equalled in the United States. 9—1y

TO MANUFACTURERS OF HYDRAULIC CEMENT.

PROPOSALS will be received by the subscriber, on the part of the James River and Kanawka Companies, for the delivery on the wharf, at the city of Richmond, Va., of Fifty Thousand Bushels of Hydraulic Cement. The amount called for must be furnished in quantities of about six thousand, bushels per month, commencing on the first of April and ending on the first of November next.

To avoid future litigation, it is to be understood, on making the proposals, that the bushel shall weigh seventy pounds NETT, and that the Cement shall be delivered in good ordder, and packed in tight casks or barrels.

Proposals will also be received for furnishing fifty thousand bushels, at any convenient point on the navigable waters of James River, or the north branch of James River, where the materials for its manufacture has been discovered.

Persons familiar with the preparation of the Cement, would do well to examine the Counties of Rockbridge and Botetourt, with a view to the establishment of works for the supply of the western end of the line; and a contract for the above quantities will be made with them before they commence operations.

As there will be required on the line of the James River and Kanawka Improvement, in the course of the present and next year, not less than half a million of bushels of this Cement, and some hundred thousand bushels more in the progress of the work towards the west, contractors will find it to their interest to furnish the article on terms that lead to future engagements.

Proposals to be directed to the subscriber at Richmond, Va. CHARLES ELLET, Jr.,
Chief Engineer of the J. R. and Ka. Co.
February 20th, 1837. 9 6t

FRAME BRIDGES.

THE undersigned, General Agent of Col. S. H. LONG, to build Bridges, or vend the right to others to build, on his Patent Plan, would respectfully inform Railroad and Bridge Corporations, that he is prepared to make contracts to build, and furnish all materials for superstructures of the kind, in any part of the United States, (Maryland excepted.)

Bridges on the above plan are to be seen at the following localities, viz. On the main road leading from Baltimore to Washington, two miles from the former place. Across the Metawamkeag river on the Military road, in Maine. On the national road in Illinois, at sundry points. On the Baltimore and Susquehanna Rrailroad at three points. On the Hudson and Patterson Railroad, in two places. On the Boston and Worcester Railroad, at several points. On the Boston and Providence Railroad, at sundry points. Across the Contoocook river at Henniker, N. H. Across the Souhegan river, at Milford, N. H. Across the Connecticut river, at Haverhill, N. H. Across the Contoocook river, at Hancock, N. H. Across the Androscoggin river, at Turner Centre, Maine. Across the Kennebec river, at Waterville, Maine. Across the Genesse river, at Squakiehill, Mount Morris, New-York. Across the White River, at Hartford Vt. Across the Connecticut River, at Lebanon, N. H. Across the mouth of the Broken Straw Creek, Penn. Across the mouth of the Cataraugus Creek, N. Y. A Railroad Bridge diagonally across the Erie, Canal, in the City of Rochester, N. Y. A Railroad Bridge at Upper Still Water, Orono, Maine. This Bridge is 500 feet in length; one of the spans is over 200 feet. It is probably the FIRMEST WOODEN BRIDGE ever built in America.

Notwithstanding his present engagements to build between twenty and thirty Railroad Bridges, and several common bridges, several of which are now in progress of construction, the subscriber will promptly attend to business of the kind to much greater extent and on liberal terms. MOSES LONG.
Rochester, Jan. 13th, 1837. 4—y

NEW ARRANGEMENT.

ROPES FOR INCLINED PLANES OF RAILROADS.

WE the subscribers having formed a co-partnership under the style and firm of Folger & Coleman, for the manufacturing and selling of Ropes for inclined planes of railroads, and for other uses, offer to supply ropes for inclined planes, of any length required without splice, at short notice, the manufacturing of cordage, heretofore carried on by S. S. Durfee & Co., will be done by the new firm, the same superintendant and machinery are employed by the new firm that were employed by S. S. Durfee & Co. All orders will be promptly attended to, and ropes will be shipped to any port in the United States.

12th month, 12th, 1836. Hudson, Columbia County State of New-York.

ROBT. C. FOLGER,
33—tf. GEORGE COLEMAN,

AMES' CELEBRATED SHOVELS, SPADES, &c.

300 dozens Ames' superior back-strap Shovels
150 do do do plain do
150 do do do cast steel Shovels & Spades
150 do do Gold-mining Shovels
100 do do plated Spades
50 do do socket Shovels and Spades.

Together with Pick Axes, Churn Drills, and Crow Bars (steel pointed,) manufactured from Salisbury refined iron—for sale by the manufacturing agents,

WITHERELL, AMES & CO.
No. 2 Liberty street, New-York.
BACKUS, AMES & CO.
No. 8 State street, Albany.

N. B—Also furnished to order, Shapes of every description, made from Salsbury refined Iron v4—tf

A SPLENDID OPPORTUNITY TO MAKE A FORTUNE.

THE Subscriber having obtained Letters Patent, from the Government of France, granting him the exclusive privilege of manufacturing Horse Shoes, by his newly invented machines, now offers the same for sale on terms which cannot fail to make an independent fortune to any enterprising gentlemen wishing to embark in the same.

The machines are in constant operation at the Troy Iron and Nail Factory, and all that is necessary to satisfy the most incredulous, that it is the most VALUABLE PATENT, ever obtained, either in this or any other country, is to witness the operation which is open for inspection to all during working hours. All letters addressed to the subscriber (post paid) will receive due attention.

Troy Iron Works, HENRY BURDEN.

N. B. Horse Shoes of all sizes will be kept constantly for sale by the principal Iron and Hard-ware Merchants, in the United States, at a small advance above the price of Horse Shoe Iron in Bar. All persons selling the same, are AUTHORISED TO WARRANT EVERY SHOE, made from the BEST REFINED IRON, and any failing to render THE MOST PERFECT SATISFACTION, both as regards workmanship and quality of Iron, will be received back, and the price of the same refunded. H. BURDEN. 47—tf

STEPHENSON,

Builder of a superior style of Passenger Cars for Railroads.

No. 264 Elizabeth street, near Bleecker street, New-York.

RAILROAD COMPANIES would do well to examine these Cars; a specimen of which may be seen on that part of the New-York and Harlaem Railroad now in operation J25tf

ARCHIMEDES WORKS.

(100 North Moor street, N. Y.)

NEW-YORK, February 12th, 1836.

THE undersigned begs leave to inform the proprietors of Railroads that they are prepared to furnish all kinds of Machinery for Railroads, Locomotive Engines of any size, Car Wheels, such as are now in successful operation on the Camden and Amboy Railroad, none of which have failed—Castings of all kinds, Wheels, Axles, and Boxes, furnished at shortest notice.

4—ytf H. R. DUNHAM & CO.

PATENT RAILROAD, SHIP AND BOAT SPIKES.

*** The Troy Iron and Nail Factory keeps constantly for sale a very extensive assortment of Wrought Spikes and Nails, from 3 to 10 inches, manufactured by the subscriber's Patent Machinery, which after five years successful operation, and now almost universal use in the United States, (as well as England, where the subscriber obtained a patent,) are found superior to any ever offered in market.

Railroad Companies may be supplied with Spikes having countersink heads suitable to the holes in iron rails, to any amount and on short notice. Almost all the Railroads now in progress in the United States are fastened with Spikes made at the above named factory—for which purpose they are found invaluable, as their adhesion is more than double any common spikes made by the hammer.

*** All orders directed to the Agent, Troy, N. Y., will be punctually attended to.

HENRY BURDEN, Agent.
Troy, N. Y., July, 1831.

*** Spikes are kept for sale, at factory prices, by I. & J. Townsend, Albany, and the principal Iron Merchants in Albany and Troy; J. I. Brower, 222 Water street, New-York; A. M. Jones, Philadelphia; T. Janviers, Baltimore; Degrand & Smith, Boston.

P. S.—Railroad Companies would do well to forward their orders as early as practicable, as the subscriber is desirous of extending the manufacturing so as to keep pace with the daily increasing demand for his Spikes. (1J23am) H. BURDEN.